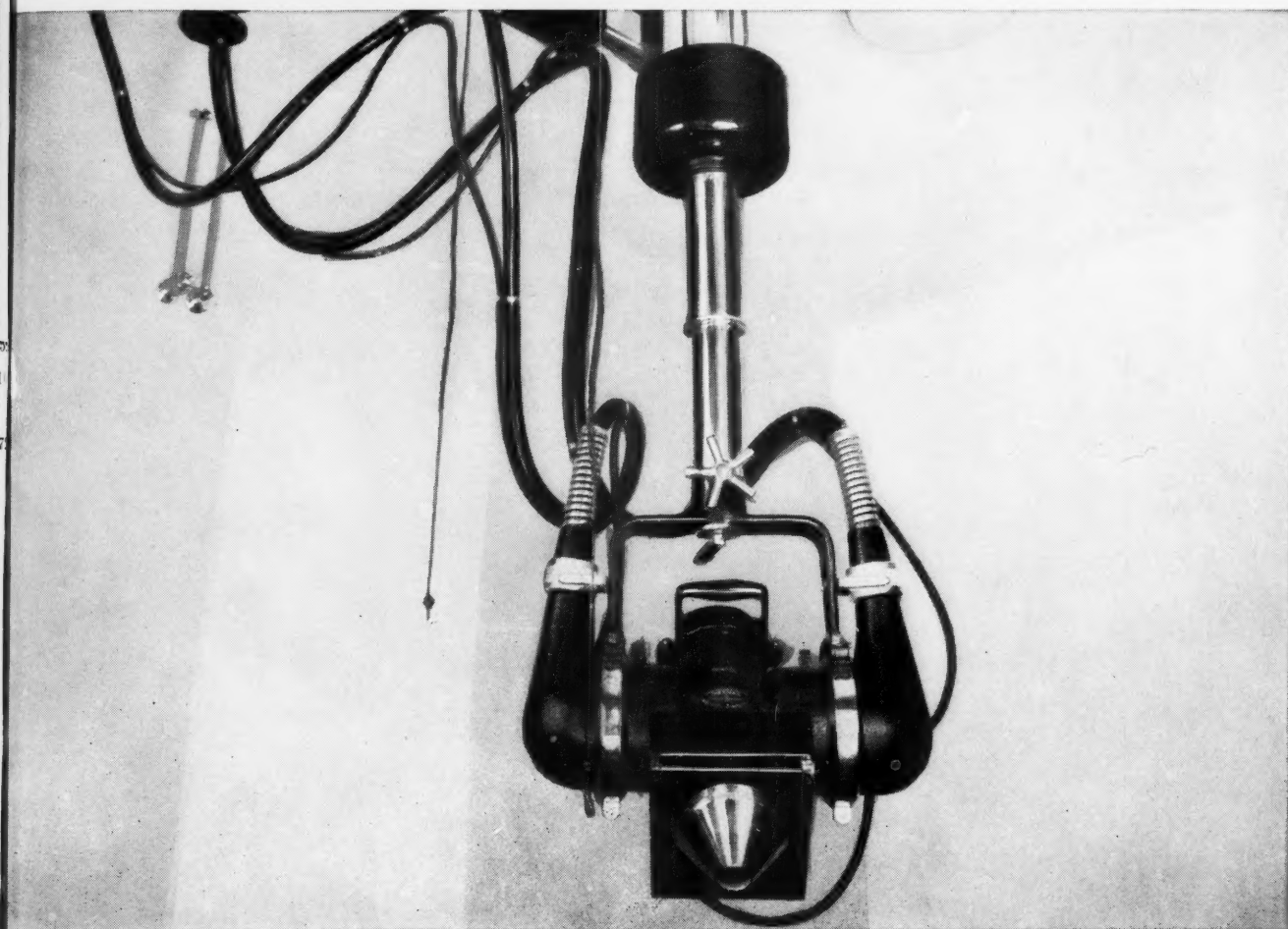


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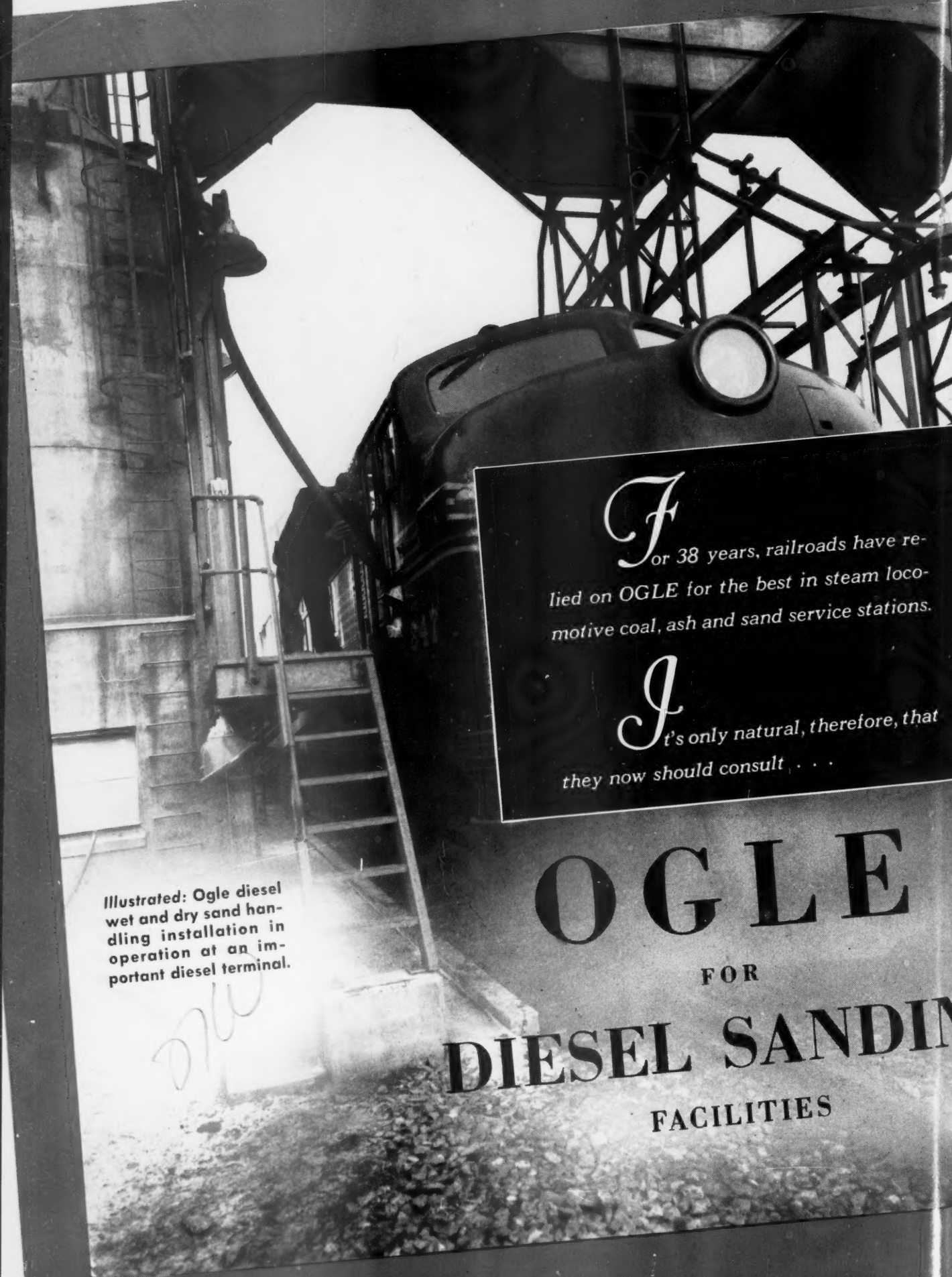
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EDITORIAL:

Courage and Persistence Will Remove the Hindrances to Railroad
Prosperity 155

REVIEW AND OUTLOOK SECTION:

Huge Capital Outlays Portend Large Economies 158
Traffic Losses Reduce '49 Materials Buying 166
More Pay for Less Work on the Railroads 168
Passenger Car High Spots of 1949 170
More Mechanization for Maintenance Forces 172
Unit Load Handling to Increase in '50 174
Outlay for Maintenance Down Slightly 176
Developments in Motive Power 178
Freight Cars Limited Earnings in 1949 180
Carriage of Persons—Business or Philanthropy? 182
Year Sets New Patterns in Freight Transport 184
Education—a Basic Electrical Requirement 186
Signaling—an Increasing Economic Asset 188
1949 in Railroad Communications 190
Bookkeeping Machines Supersede Pens 192
Political Confusion Hampers Canadian Roads 194
Mexican Railways on the Mend in 1949 198
A Review of Railway Operations in 1949 200

STATISTICAL SECTION:

1949 Purchases Total \$2,300 Million 215
"New Capital" Need Dominates Railroad Finance 218
Locomotives Ordered in 1949 225
Passenger Train Cars Ordered in 1949 230
Freight-Train Cars Ordered in 1949 Total 9,188 231
Equipment Prices Reported in 1949 233
A Good Year in Communications 235
Signal Construction at High Level 238
Construction Volume Continues High 244
More Mileage Abandoned in 1949 256

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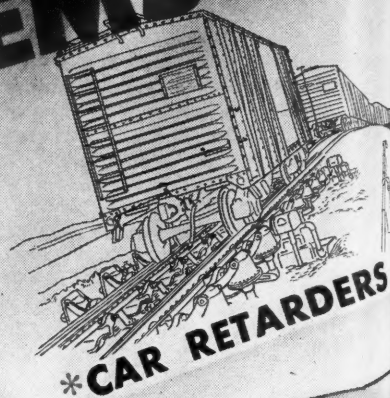
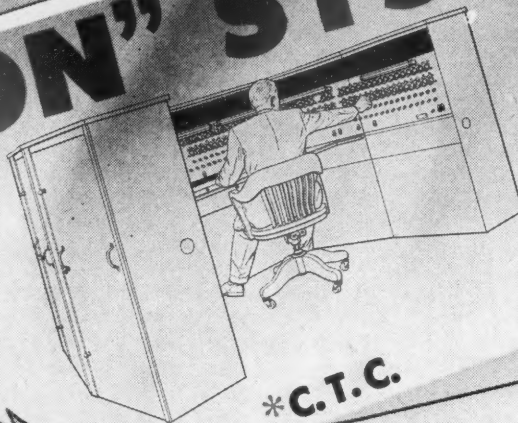
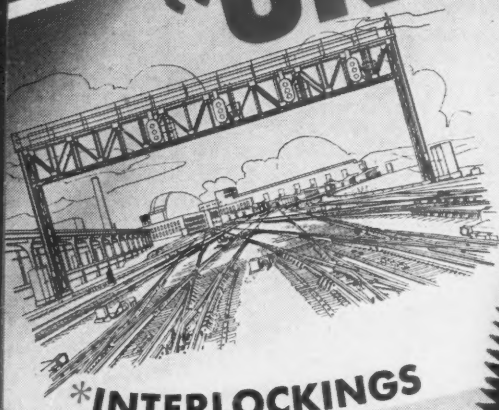
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YEAR AT A GLANCE

INTO HISTORY: The year 1949 has passed into history—and we doubt if many railroad men were sorry to see it go. It was, to be sure, a year of progress in many respects—some new records of operating efficiency were achieved; new equipment was installed in considerable volume, and there were a few definitely encouraging signs of greater understanding of railroad problems on the part of regulatory authorities, some government officials and certain sections of the public. But in many respects the year was also a disappointing one, particularly in its immediate financial results. The rate of return reached its lowest point in years—partly because traffic was curtailed by labor troubles in the coal and steel industries, and by other causes, and partly because railroad costs were further increased by the full impact of late 1948 wage boosts and the 40-hr. week for non-operating employees. These cost increases were offset to some extent by the Ex Parte 168 freight-rate increases and the more recent rise in Eastern territory passenger fares—but such rate and fare increases held a greater threat than ever before of diverting traffic from the heavily-regulated and unsubsidized railroads to their scantily-regulated and heavily-subsidized competitors. Except for some slight gains in the intangible field of public opinion, 1949 brought no positive action toward equalization of the railroads' competitive situation. The absence of such action, alone, would have kept the year from being a "good" one.

THE YEAR'S RESULTS: The story of 1949—its traffic volume, its operating record, its financial results—are reviewed on page 200 by Dr. Julius H. Parmelee, in an article similar to those which he has prepared for so many previous Statistical Issues. "The year," he concludes, after his usual well-informed and carefully-balanced analysis, "was one of many developments . . . some of them appear confused, and at times discouraging." But "within the industry," he adds, "the railroads have made progress." That progress was the brightest feature of the year just ended.

EQUIPMENT PICTURE: Orders for new locomotives—mostly Diesel-electrics—continued to be placed in good volume throughout the year (page 225), indicating the determination of the railroads to obtain on as large a scale as available funds will permit the economy and efficiency of new motive power. Orders for cars (pages 230 and 231) were lower than in other recent years, but installations of new cars, from orders placed prior to 1949, were at exceptionally high levels. More new freight cars went into service in 1949 than in any other year except one since 1925; and more new passenger cars than in any other year, with only two exceptions, since 1930. Significantly, approximately half of the year's total car orders were placed in the fourth quarter, and many of those in its closing weeks, a circumstance which lends support to recent predictions of an upswing in car orders early in 1950.

AS TO FIXED FACILITIES: Despite, or perhaps because of, the year's adverse factors, construction activity was carried

on in larger volume throughout 1949 than in any other year since 1930, with the single exception of 1948 (page 244). Signal construction, on a unit basis, reached a new high level (page 238), while installation of new communications facilities likewise continued at a good pace (page 235). Such work, plus the financing of the large amount of equipment delivered during the year, resulted in total capital expenditures of about \$1.3 billion—the largest ever recorded in any single year. "Most of these expenditures," says the article on page 158, "have been made so recently that . . . they have contributed but little toward the improvements in service, reductions of operating expenses and increases in net operating income, which they are intended to cause. Their full effect . . . will begin to become evident in the early part of 1950 if freight traffic is as large as it promises to be. . . ."

MORE NEW CAPITAL NEEDED: Large as were the railroads' capital expenditures in 1949, still more money could profitably be spent, particularly on fixed facilities. The question is—where to get the money? (Page 218).

DARK SPOT: Relations with employees continued throughout 1949 to be an unsettled—and unsatisfactory—part of the overall picture. The railroads won an important victory in rejection of demands for extra firemen on Diesel locomotives, but the year also brought the expensive 40-hr. week for non-operating employees; costly strikes on two major roads; demands for a 40-hr. week for yard employees; and renewal of agitation for limitation on train lengths. The "calendar" of labor events (page 169) gives no promise that wage scales will soon be stabilized or "demands" for further concessions abated.

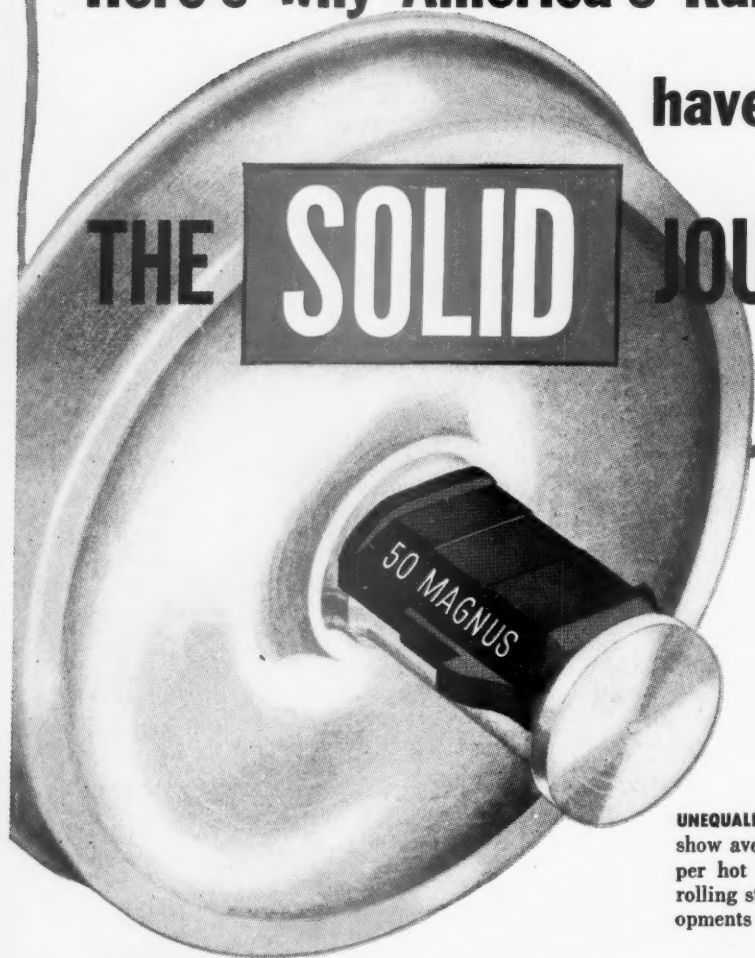
BRIGHTER ASPECTS: The year just ended was, nevertheless, one of heartening progress in many fields. It brought increased experience with mechanized track maintenance, which portends larger buying of work equipment for 1950 (page 172); more attention to unit handling of l.c.l. freight, and of the railroads' own materials (page 174); some promising developments in motive power (page 178); increased mechanization of office procedures (page 192); and greater emphasis on pricing, merchandising and service in both passenger and freight traffic (pages 182 and 184).

WHAT OF 1950? It seems to be pretty generally agreed that traffic will be larger in 1950 than in 1949, and that equipment, particularly freight cars, will be purchased in greater volume. In their broader aspects, Dr. Parmelee says on page 214, "railroad prospects may be regarded with a reasonable amount of optimism. . . . 1950 may prove to be a year of decision." A similarly cautious optimism is expressed in our own editorial—but the editorial also calls attention to the "archaic political surroundings" which must first be overcome.

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Courage and Persistence Will Remove the Hindrances to Railroad Prosperity

As the railroad industry enters the mid-century year, its owners, staff and patrons are presented with more evidence to cheer them than to chill their hopes for the future. There is no denying that, not only during the past year but for the greater part of the past two decades, the carriers have taken punishment of a severity which would have proved fatal to less hardy business organizations. It is true, also, that the political and institutional conditions surrounding railroad operation are still a long way from perfect—a long way, indeed, from elementary common sense and fair dealing.

Taking full account of all such negative factors, it still remains a fact that the hardships endured by the railroads in 1949 were insufficient to deprive them of their zeal to improve the quality and inherent economy of their service. They managed in 1949 to find almost \$1.3 billion with which to provide betterments to their properties and they made great forward strides in adapting themselves to a rapidly changing environment. Ability of adaptation to altered surroundings is the test of survival, and no industry has ever shown this quality to a more marked degree than the railroads are displaying it now.

Objective reporting of significant facts in terms of the interests of professional railroad people—which is the primary function this paper strives always to perform—cannot neglect to record that unfavorable

influences afflicted the railroads in 1949, and still beset them. The future, whether it is to be poverty-stricken or prosperous, is not, however, dependent upon the present activity of either favorable or unfavorable forces. What the future does hinge upon is the *trend* of these forces—that is, are the friendly ones growing stronger and the unfriendly ones weaker? The answer to that question must be: Yes. Let's have a look at some of the important forces at work upon the railroads, and note their trends.

I. *Government expenditures in behalf of agencies of transportation competitive with the railroads have climbed to unprecedented amounts.* Of all the adverse influences on railroad prosperity and railroad prospects, this one is by far the most important. No degree of inherently superior economy on the side of the railroads could, in the long run, hope to prove victorious in a contest with the unlimited resources of the Treasury of the United States working in behalf of rival forms of transportation. These rivals would be bound to win with this powerful ally, even if they had no more real efficiency than a wheelbarrow or a pack mule. The question is: Are these unlimited raids on the Treasury going to continue?

They will, of course, continue until a popular outcry arises against them. In the December issue of the magazine *Plain Talk* (a mighty good magazine, too, by the way) there was published an article entitled

"We're for Government Economy But . . ." by Stanley High, one of the editors of Reader's Digest. The article is abstracted in the January issue of Reader's Digest. Its theme is quite familiar to regular readers of this paper—namely that of people clamoring for *government economy for the other fellow*, accompanied by plenty of government handouts for themselves. A half-dozen striking examples are cited, and the Army Engineers' "Pork Barrel Bill" is specifically mentioned. Mr. High concludes that economy in government will come about when enough people quit seeking what they can get from government and begin to inquire what government services they can dispense with.

How much longer do business propagandists in behalf of lower taxes and less "government intervention" believe their outcries are going to carry any conviction—in the light of the fact that *businessmen themselves are the principal factor in advancing socialization*? This paper began the exposure of this hypocrisy on the part of businessmen two decades ago, and has continued the process relentlessly ever since—until, at length, the validity and importance of this theme has impressed itself upon publications with a large popular audience. Hypocrisy in favoring "free enterprise" for themselves and socialization for transportation will be put aside by business leaders when it ceases to pay dividends and becomes an expensive liability. All signs point to the early arrival of that time.

The Capital Problem

II. *The manufacturing industry is complaining that it is unable to sell equity securities, while most railroads cannot even sell bonds, except for equipment.* A large-scale and timely effort is being made by virtually all business organizations to arouse public interest in the danger to the healthy growth of private business inherent in policies of taxation that take most of the profits, if any, of risk-assuming investment. If an investor is going to be able to keep only 3 or 4 per cent of the return on his investment, he is better off putting his money in bonds which will earn that rate of interest with reasonable safety of principal, than he will be by investing in common stocks which might earn 20 per cent (most of which would be taken away in taxes), and also might earn nothing.

The peculiar difficulties of the railroads in this regard are the responsibility, not of politicians, but of business leadership, which thus does not come with clean hands into the court of public opinion. Here again is a gross inconsistency in the position of business leadership at a time when it is desperately important, if private enterprise is to survive, that business good faith be beyond question. Hypocrisy will not pay here either when it begins to be a little more thoroughly exposed. It is being exposed, and the disclosure will continue.

On the strength of the foregoing analysis—which could be expanded ad infinitum by further examples—this paper confidently predicts that the "climate of opinion" controlling the railroads' relationships with their subsidized rivals is due for early improvement. If that improvement comes quickly and with reasonable thoroughness, then about half of the conditions which make railroading less profitable than other progressive industries will vanish. *Whether* this improvement in "climate" will be adequate hinges largely on the determination, persistence, and skill shown by the railroads and their friends in making transportation socialism an unpopular and unprofitable pastime for businessmen to indulge in.

Sentiment for "Deregulation"

III. *There is a lot of sentiment, in the abstract, for "deregulating" the railroads, but specific projects to this end are seldom mentioned.* It would require much more optimism than realism can justify to assume that Congress is going to enact a "commodity clause," parallel to the one which prohibits the railroads from engaging in commercial mining or manufacture, which would prevent manufacturers, coal operators, and petroleum refiners from engaging in the transportation business in vehicles and vessels owned or leased by them. Failing such a clause, there can never be "equality of regulation" as between the railroads and private carriers or contract carriers, unless the railroads are permitted to disregard the established rate schedules and make contract rates wherever such rates are necessary to prevent diversion of traffic, and will yield a margin above "out-of-pocket" costs.

Popular understanding of the harmful public effect of toll-free barge transportation and almost-free use of the highways by overloaded trailer-trucks is on the increase, because these questions are discussed in specific terms. The case of over-regulation of the railroads—which is probably just as important a factor in traffic diversion as underpayment for the use of public property by rival carriers—is not being set forth in such tangible and understandable terms. Nevertheless, the sentiment for "deregulation" exists, and can be made operative in the railroads' favor whenever this aspect of the competitive situation is taken up as realistically and concretely as has been that of adequate payment for commercial use of publicly owned transportation facilities.

IV. *The labor problem of the railroads is more serious than that of most other industries.* On the other hand, railroad work is naturally less repetitive and more interesting than that offered by most other large industries—hence the *inherent* situation is more favorable on the railroads. This seeming paradox is explained by a series of unfortunate historical accidents to which no more than a passing glance is possible here. Up to the end of the 1920's railroad labor was more highly organized and enjoyed

sounder relationships with management than, perhaps, in any other large industry. Since this unionism was of early origin, it consisted of old-style craft organizations to a degree unheard of in any other industry. There were some "make-work" rules, but they were not unduly onerous—each railroad had a few, but they differed from road to road, and no one company had a really fatal burden of them.

Then came the terrible Thirties, and, ever since, it has taken a lot of good will on the part of both sides of this issue to keep a pathological political situation from becoming fatal. First, there came the changes in the Railway Labor Act which established the National Railroad Adjustment Board with referees who, in effect, set out to take every "make-work" or "mock-work" rule they could find on any one railroad and apply it to all other railroads.

Next came the militant new unions in industries not before organized, but now given over to unionization by the protection of the Wagner Act. They went out for big objectives. With a score of unions on the railroads, many competing with each other, human nature operated to induce some of these organizations, and ultimately all of them, to reach for goals comparable to those sought by the aggressive new unions in the previously unorganized industries. These other industries gave ground before the union onslaught—and the very next day passed along the cost of their concessions in higher prices to consumers. When the railroads were subjected to similar pressure and tried the same solution, they found themselves saddled with the expense but without the ability to raise their "take" from the customers proportionately, because of the leisurely gait of the Interstate Commerce Commission. By the time the I.C.C. had at length awakened to the need for prompter action, competing agencies of transportation had entered the field in sufficient numbers to render rate increases a somewhat hazardous means of recouping the cost of wage increases.

Labor Difficulties Not "Inherent"

So—in spite of the interesting work they offer and a long tradition of union recognition—the railroads find themselves with a labor problem more expensive and dangerous, perhaps, than that of any other large industry. Difficult as it is, however, the difficulties are, at least, not inherent—and patient persistence in relentlessly expounding the facts, to employees and public alike, must eventually prove just as effective in dealing with this problem as this method is now proving itself to be in developing public understanding of the situation regarding subsidized competition.

Nor should it be overlooked, either, how quickly labor relations on the railroads would change for the better, once railroad opportunity to secure the traffic to which they have a sound economic claim were established; and once adequate supplies of new capital were thus restored. An industry with expanding job

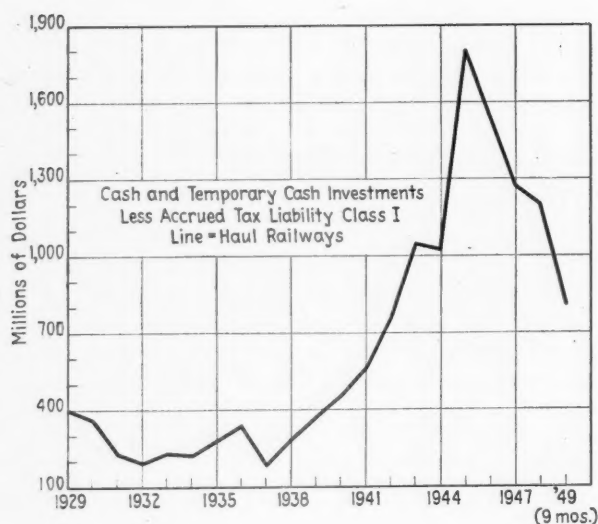
openings finds "make-work" rules a decreasing handicap while, at the same time, with fear of unemployment on the decline, union pressure for such rules inevitably diminishes.

The forces discussed in the foregoing, under the headings I, II, III, and IV, include practically all of the influences which tend to make railroading less profitable, and hence less attractive to investment capital, than most other industry. As already suggested, this paper sees no reason whatever why any of these factors should become any more adverse than they have already. On the contrary, sufficient reasons have been set forth to indicate why one or two of these adverse factors will probably soon diminish in intensity. There is nothing whatever but weariness and loss of heart which can prevent the ultimate elimination of all of them.

To get a true perspective on the hardness of this old industry—which is, at the same time, always new—a brief glance backward to the beginning of the present century is helpful. Since that time other industries have been born, grown old and died—but here are the railroads in 1949 hauling almost four times the freight volume they had in 1900, while population has not quite doubled. Even in passenger transportation, where so many new-fangled ways of getting around have burgeoned since 1900, there was more than twice the volume by rail in 1949 than at the beginning of the century, indicating that, even in passenger traffic, the movement by rail has more than kept pace with the growth in population.

There are no difficulties confronting the railroads which stem from economic or technological obsolescence. All of them lie in archaic *political* surroundings. Hence all of them are remediable by measures which combat human ignorance and inertia. If these measures cannot be applied with sufficient skill to restore the railroads to a degree of prosperity at least equal to that of other industries providing necessary goods and services, then probably popular ignorance and inertia have such a firm hold that all our traditional institutions are imperiled. In that case, there is no "railroad problem" apart from the general problem of economic and political freedom.

If popular ignorance and inertia can be dispelled to the degree necessary to preserve a free America, it is going to be mighty hard to prevent the enlightenment thus acquired from going to work to take the railroads out of the Cinderella class. Anybody who doesn't expect that this is what is going to happen has done his looking-around in different places from those continually scrutinized by this paper—and, when it comes to looking for economic and political information, we do not neglect many places where it is available.



The capital expenditures of about \$1 billion \$300 million made by the railways in 1949 exceed those ever made in any previous year; the capital expenditures of about \$2 billion \$600 million made in 1948 and 1949 largely exceed those ever made in any other period of two years; and the capital expenditures of \$4 billion made in 1946-1949, inclusive, exceed those ever made in any other period of four years. The previous record of \$3½ billion for four consecutive years was made in 1923-1926, inclusive. Of course, in measuring the probable effect and value of these huge expenditures since World War II as compared with those following World War I, consideration must be given to the differences in the prices paid for equipment and materials. But consideration must also be given to the differences in the purposes for which the expenditures were made and to

the differences in the utility of the equipment and materials bought.

Capital expenditures are made to (1) increase capacity, (2) improve service and (3) effect economies. Those made in 1923-1926, inclusive, very largely made it possible to effect the improvement in service and increase in net operating income that occurred throughout the years 1923-1929, inclusive, and even to handle so successfully the hugely increased freight and passenger traffic of World War II.

An important fact that statistics of large capital expenditures alone do not disclose is the large maintenance expenditures by which they are always accompanied, and which also contribute toward putting railway properties in improved condition for efficiency and economy of operation. Because of the small capital and maintenance expenditures made during the long depression, and the government restrictions on such expenditures during the war, most railways came out of World War II, as they did out of World War I, in subnormal physical condition. But this has been partly remedied by the large expenditures, both capital and maintenance, that were made during the past four years, and it seems probable that most railways are now in better physical condition to effect economies than they ever were before. If this is the case, it is a fact of vital importance, because of the great increases in unit costs of labor, fuel and materials with which railway management is confronted.

Another fact of major importance is that most of these expenditures have been made so recently that in the past they have contributed but little toward the improvements in service, reductions of operating expenses and increases in net operating income, which they are intended to cause. Their full effect, especially their favorable effect on net operating income, will begin to become evident in the early part of 1950 if freight traffic is as large as it promises to be because, among other

Table I — Selected Balance Sheet Items — Class I Line-Haul Railways

Year	Cash and Temporary Cash Investments (000)	Total Current Assets (000)	Total Current Liabilities (000)	Excess of Current Assets over Liabilities (000)	Total Long-Term Debt (000)	Total Corporate Surplus (000)
1929*	\$677,955	\$1,717,953	\$1,200,984	\$516,969	\$11,138,121	\$5,029,171
1930*	592,071	1,510,975	1,162,170	348,805	11,174,816	4,577,730
1931	419,510	1,213,350	1,147,239	66,111	11,153,678	4,395,508
1932	379,136	1,063,271	1,130,731	67,460	11,247,777	4,094,531
1933	394,117	1,034,560	1,261,382	226,822	11,112,005	3,900,883
1934	380,212	1,058,326	1,571,326	412,995	11,041,472	3,714,302
1935	439,403	1,086,467	1,670,767	584,300	10,821,788	3,507,220
1936	578,343	1,292,421	1,885,574	593,153	10,452,266	3,349,889
1937	392,486	1,143,990	1,937,830	793,840	10,686,814	3,126,391
1938	480,550	1,120,968	2,243,961	1,122,993	10,558,723	2,739,742
1939	578,359	1,292,705	2,555,903	1,263,198	10,352,646	2,563,879
1940	680,400	1,442,142	697,200†	744,942	11,288,311‡	2,474,249
1941	904,600	1,914,544	1,115,320	799,224	11,186,063	2,666,625
1942	1,736,933	3,065,093	1,806,030	1,259,063	10,879,476	3,167,986
1943	2,807,275	4,497,065	2,923,078	1,573,987	10,462,770	3,748,508
1944	2,753,560	4,488,042	2,844,042	1,643,832	9,830,186	4,327,893
1945	2,545,909	4,345,830	2,108,245	2,237,585	9,286,001	4,608,846
1946	1,950,874	3,494,260	1,584,433	1,909,827	9,093,281	4,638,958
1947	1,908,887	3,575,914	1,942,772	1,633,142	8,831,806	5,174,106
1948	1,947,046	3,675,819	2,065,928	1,609,891	8,960,451	5,702,948
1949	1,477,805	3,021,838	1,779,331	1,242,507	(1949 totals are Sept. 30)	

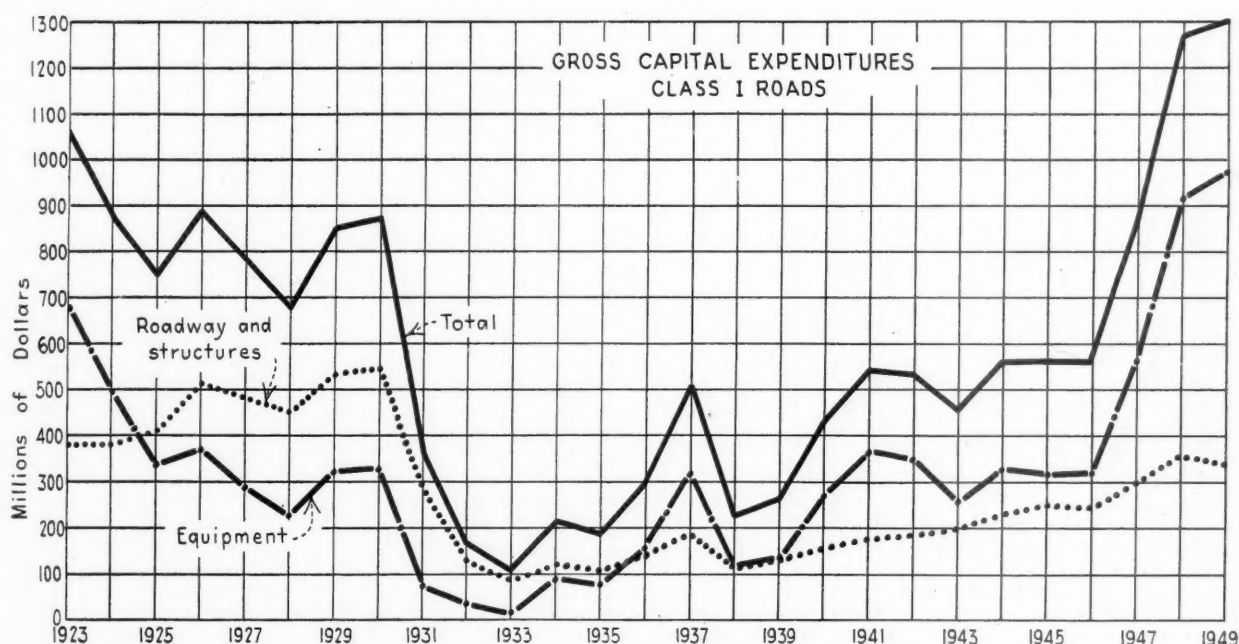
*Switching and Terminal Companies included.

†In 1940 and thereafter long-term debt in default is included in long-term debt. In years prior thereto it is included in current liabilities. Likewise in 1940 and thereafter defaulted interest is removed from current liabilities to deferred liabilities.

‡Tax liability included in 1941 and thereafter.

TAL OUTLAYS Portend Large Economies

Record expenditures since end of war for improvements to equipment and the fixed plant aimed at greater efficiency and better service—Need seen for continued high activity



Capital expenditures for roadway and structures consistently exceeded those for equipment for many years prior to 1936 but since that year the reverse has been true. The sharp upturn in total expenditures that occurred after 1946 was largely the result of greater purchases of equipment

things, (1) of the full resumption of steel and coal production following the nationwide strikes, (2) large production of automobiles, and (3) continuance of construction, especially residential building, on a record scale, all of which create a large volume of traffic which must move by rail.

The statistics and charts herewith show that immediately following both World War I and World War II the major part of capital expenditures was made for equipment. Expenditures for equipment in the four years 1923-1926, inclusive, were almost \$2 billion, or 53 per cent of the total, and for roadway and structures about \$1 billion \$700 million, or 47 per cent. In 1946-1949 expenditures for equipment were about \$2 billion \$800 million, or 69 per cent of the total, and for roadway and structures only \$1 billion \$233 million, or 31 per cent. But in later years after World War I the percentage of expenditures made for equipment declined and the percentage made for roadway and structures increased. As the chart shows, expenditures for roadway and structures exceeded those for equipment in all the years 1925-1935, inclusive; but, thereafter, throughout

1936-1949, inclusive, expenditures for equipment again have been the larger. Total expenditures for equipment during the 27 years 1923-1949, inclusive, were about \$16 billion; for roadway and structures about \$7½ billion.

Whether expenditures for equipment will continue to be the larger, and, if so, for how long, will depend on the needs of each railway as shown by future experience. It is a certainty that the railways as a whole have not yet got anywhere near all the new and improved equipment, especially freight cars, that they need in order to give the service and effect the economies that needed replacement of much old equipment with the most modern equipment would make possible. It is equally certain, however, that there is almost unlimited need, in the interest of efficiency and economy, of improvements in roadway and structures, the means for effecting which the manufacturers in the railway supply field have made available. The real problem is that of getting, either from earnings or the sale of securities, adequate capital for needed expenditures on roadway and structures.

Equipment Expenditures Analyzed

By C. B. PECK
Mechanical Department Editor

Attention has already been called to the large gross capital expenditures which the Class I railways made during 1923 to 1926, inclusive, and to the fact that the expenditures made during 1946 to 1949, inclusive, were more than half a billion dollars larger. During the eight-year equipment rehabilitation period following World War I, of which 1923 to 1926 was the first half, the Class I roads spent \$3 billion for additions and betterments to their inventory of motive power and rolling stock. To understand the part these expenditures played in the success of the railways in meeting the needs of the nation during World War II it is first necessary to make a brief survey of what was bought

with these funds and those of the years immediately before World War II.

For the purposes of this study the years from 1923 to 1949 may be divided into five periods. The first covers the eight years from 1923 to 1930, inclusive. The first half of this period began with high expenditures for freight cars and locomotives which dropped off rapidly, to become more stable during the second half of the period.

Freight Cars

The railways went into World War I with a freight-car inventory in poor condition to meet the demands for intensive utilization which the conduct of the war placed on them. Freight cars were in transition from wood to steel and steel-frame construction, and poorly reinforced wooden cars mixed in trains with steel cars frequently broke in two with loss of much time and property.

Table 2 — Changes in Cash and Current Assets of Individual Large Railroads*

	Cash & Temporary Cash Investments Sept. 30		Inc. or Dec. %	Total Current Assets		Total Current Liabilities		Excess of Current Assets over Liabilities		Inc. or Dec. %
	1949	1948		End of Sept. 1949	End of Sept. 1948	End of Sept. 1949	End of Sept. 1948	End of Sept. 1949	End of Sept. 1948	
A. T. & S. F.	129,553,681	151,141,640	-14	212,272,687	243,618,724	95,599,116	106,838,553	116,673,571	136,780,171	-15
A. C. L.	13,291,936	18,489,790	-28	37,564,160	46,324,937	18,683,997	22,718,926	18,880,163	23,606,011	-20
B. & O.	38,534,015	46,895,444	-18	90,924,764	100,596,474	50,192,418	57,863,847	40,732,346	42,732,627	-5
B. & M.	16,203,662	17,838,117	-9	28,803,312	32,030,306	16,429,039	19,135,626	12,374,273	12,894,680	-4
C. of Ga.	3,127,594	3,446,464	-9	10,201,646	15,687,712	6,475,986	6,279,611	3,725,660	9,408,101	-60
C. of N. J.	2,425,720	3,951,869	-39	12,627,259	16,524,556	9,528,077	12,036,605	3,099,182	4,497,951	-31
C. of Pa.	4,686,229	5,984,993	-21	8,376,546	9,495,342	3,360,791	4,481,915	5,015,755	5,013,427	0
C. & O.	39,137,802	18,633,634	+110	84,535,125	77,443,431	69,909,625	84,187,542	14,625,500	-6,744,111	-22
C. & E. I.	2,758,569	4,963,654	-44	7,694,916	10,787,712	5,382,301	6,835,926	2,312,615	3,951,786	-41
C. & N. W.	12,343,528	23,972,358	-48	46,924,295	60,884,674	36,781,251	37,308,176	10,143,044	23,576,498	-57
C. B. & Q.	23,294,241	45,662,323	-49	63,912,833	91,015,847	43,240,805	53,180,124	20,672,028	37,835,723	-45
C. G. W.	2,725,634	6,692,306	-59	7,654,343	11,185,472	6,422,611	8,975,505	1,231,732	2,209,967	-44
C. M. St. P. & P.	34,347,261	40,629,644	-15	84,134,602	96,779,975	42,030,405	43,296,590	42,104,197	53,483,385	-21
C. R. I. & P.	41,924,502	51,440,735	-18	70,760,749	81,972,315	42,200,437	45,135,029	28,560,312	36,837,286	-22
C. St. P. M. & O.	3,414,662	5,239,242	-35	8,816,176	11,333,356	58,823,102	6,885,679	2,993,074	4,447,677	-33
D. & H.	7,226,690	8,974,496	-19	15,143,874	18,518,504	6,558,598	8,972,353	8,585,276	9,546,151	-10
D. L. & W.	10,088,694	12,921,377	-22	23,596,988	28,950,265	15,144,530	15,388,731	8,452,408	13,561,534	-38
D. & R. G. W.	16,649,764	18,862,774	-12	33,539,916	38,034,097	22,137,127	23,351,319	11,402,789	14,682,778	-22
D. M. & I. R.	12,628,386	13,708,387	-8	19,157,030	21,331,586	16,472,246	16,011,310	2,684,784	5,320,276	-49
E. J. & E.	14,177,457	15,741,377	-10	18,921,559	20,799,889	14,798,360	16,165,011	4,123,199	4,634,878	-11
Erie.	19,257,187	37,141,813	-48	42,193,051	62,972,861	29,812,167	36,246,637	12,380,884	26,726,224	-54
G. T. W.	1,224,139	2,051,398	-40	8,674,711	11,231,658	8,693,640	9,186,916	-18,929	2,044,742	†
G. N.	36,171,152	51,106,590	-29	76,444,896	92,469,819	39,575,085	52,144,611	36,869,811	40,325,208	-8
G. M. & O.	12,301,379	11,418,027	+8	28,906,539	30,513,524	18,027,189	19,511,593	10,879,350	11,001,931	-1
I. C.	74,683,615	75,789,111	-1	114,252,509	117,796,635	72,225,251	75,071,432	42,027,258	42,725,203	-2
L. V.	9,900,632	13,134,785	-25	22,704,346	26,650,189	9,693,546	11,505,740	13,010,800	15,154,449	-14
L. I.	2,847,754	4,923,234	-42	15,094,359	14,412,936	19,934,669	17,621,047	-4,840,310	-3,208,111	†
L. & N.	20,976,315	67,219,963	-69	76,145,654	109,149,945	30,831,905	37,599,848	45,313,749	71,640,097	-37
M. St. P. & S. S. M.	3,998,365	13,389,678	-70	18,868,703	21,209,273	8,935,227	10,018,836	9,882,476	11,190,437	-12
M.-K.-T.	9,632,126	11,790,932	-18	22,288,462	25,300,755	16,429,316	19,160,876	5,859,146	6,139,879	-4
N. Y. C.	54,809,281	67,989,791	-19	165,910,313	186,861,886	114,852,070	127,816,098	51,058,243	59,045,788	-13
N. Y. C. & St. L.	6,672,852	11,955,324	-44	22,913,996	30,692,372	19,022,190	23,192,387	3,891,806	7,499,985	-48
N. Y. N. H. & H.	27,712,917	24,863,264	+11	47,167,180	52,489,838	28,394,956	33,757,120	18,772,224	18,732,718	0
N. & W.	35,656,622	52,067,424	-31	69,973,985	94,139,108	36,694,307	43,041,760	33,279,678	51,097,348	-35
N. P.	15,076,821	32,777,541	-54	55,388,736	72,586,882	28,268,835	30,178,966	27,119,901	42,407,916	-36
P. R. R.	117,481,184	171,038,587	-31	261,471,721	332,411,525	146,764,635	196,566,116	114,707,086	135,845,409	-15
P. & L. E.	2,566,169	13,917,812	-82	10,056,927	21,242,821	12,478,103	14,468,901	-2,421,176	6,773,920	†
Reading.	10,719,759	17,345,450	-38	28,629,376	37,765,440	23,811,754	29,868,136	4,817,622	7,897,304	-39
St. L.-S. F.	29,452,415	41,674,704	-29	48,471,066	60,159,144	22,319,508	25,293,956	26,151,558	34,865,188	-25
St. L. S. W.	21,468,248	13,769,170	+56	31,324,929	25,502,320	14,207,349	14,811,429	17,117,580	10,690,891	+60
S. A. L.	20,001,372	24,097,218	-17	39,443,878	47,850,388	24,940,492	25,256,783	14,503,386	22,593,605	-36
Southern.	42,991,130	60,863,198	-29	74,895,800	98,351,378	47,266,460	54,011,106	27,629,340	44,340,272	-38
S. P. System.	92,491,018	111,248,971	-17	189,962,141	215,727,251	103,029,852	115,053,046	86,932,289	100,674,205	-14
T. & P.	12,494,089	13,424,783	-7	26,363,371	29,972,605	10,951,146	15,044,976	15,412,225	14,927,629	+3
U. P.	91,924,708	120,698,045	-24	174,221,739	211,138,781	94,028,276	114,279,662	80,193,463	96,859,119	-17
Wabash.	21,674,532	30,364,770	-29	34,936,600	45,267,590	23,920,415	28,143,312	11,016,185	17,124,278	-36

*Certain capital and other reserve funds, particularly of roads recently reorganized, are not included.
†Current liabilities exceeded current assets.

During the eight years of rehabilitation subsequent to that war the Class I roads spent \$1 billion \$750 million on freight-car betterments. With a major part of this they bought and installed some 815,000 new freight cars, and retired nearly 832,000 of the old cars. It was this rehabilitation, carried out before the depression years, which prepared the railroads to do the transportation job of World War II with a degree of reliability wholly lacking during World War I. This substantially completed the transition of the freight-car inventory from wood to all-steel or steel-frame construction.

Following the depression period (1931 to 1935, inclusive), there was a considerable increase in expenditures for new cars. This was set back sharply during 1938 and 1939 but returned to a substantial level in 1940 and continued through the war period (1940 to 1945, inclusive). During the prewar and war periods (10 years 1936 to 1945) the gross investment in freight cars was close to \$1 billion \$500 million. Out of this sum 466,400 new freight cars were purchased. During 1946 and 1947 Class I deliveries amounted to 96,280 freight cars which were purchased out of capital expenditures for freight-car betterments of \$408 million. For the four years 1946 to 1949, inclusive, deliveries are estimated at approximately 275,000 freight cars, and the expenditure for freight-car betterments during the full four-year period amounted to around \$1 billion \$250 million.

Considerably less than half of the 741,000 new freight cars built 1936 to 1949, inclusive, are of lightweight construction, employing high-strength materials. Many of them are carried on trucks designed to reduce vertical shocks and some are equipped with trucks designed to operate at speeds higher than are suitable for A.A.R. standard trucks. As was the case during the rehabilitation period following World War I, these new cars have been replacements rather than additions to the size of the inventory. At the end of the war period there were 75,000 fewer cars in the Class I inventory than at the beginning of 1936.

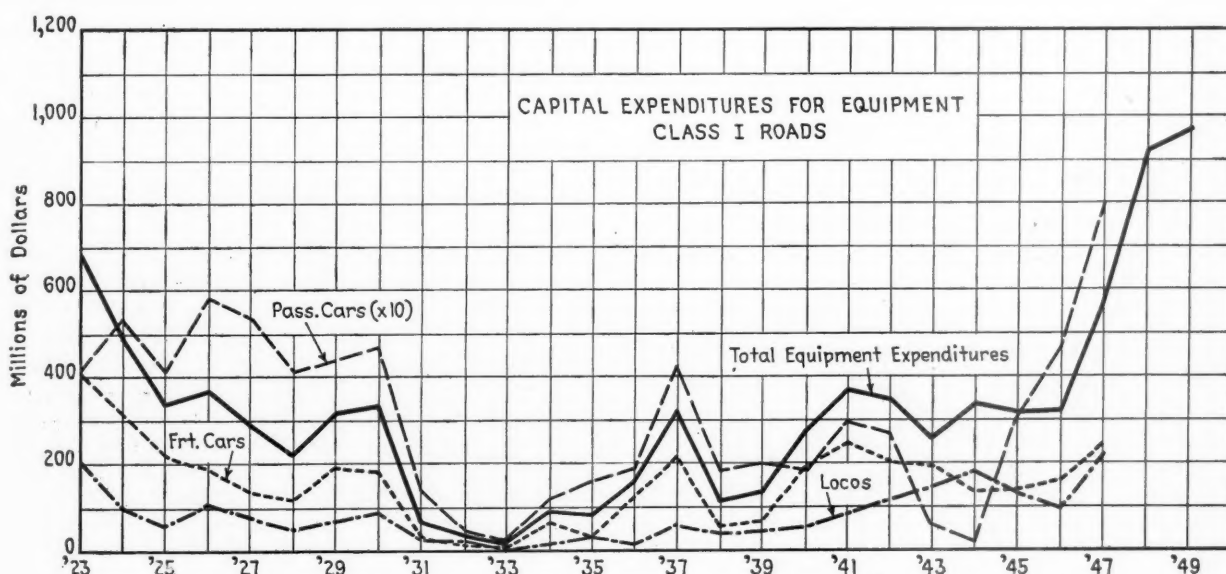
Although expenditures for locomotive betterments followed substantially the same trend as those for freight cars during the eight years of rehabilitation beginning with 1923, the course since that time has not followed the fluctuations which have characterized freight-car expenditures. During the eight years 1923 to 1930, inclusive, the Class I carriers invested \$750 million in betterment of the motive-power inventory. New locomotives purchased amounted to 15,300 units. It was during this period that the drag freight train began to give way to the scheduled movement of freight at speeds which required locomotives with high horsepower capacity as well as high tractive capacity. The locomotives built during and after this period brought freight motive power into conformity with the needs of this type of freight-train service.

Locomotives

After the depression, beginning with 1937, locomotive purchases were resumed and there was an unbroken upward trend from 1938 through 1944. For the six years 1940 to 1945, purchases averaged about 800 a year. For the four years 1946 to 1949, the expenditures have exceeded \$1 billion. The number of locomotive units delivered during ten months of 1949 was nearly 1,600.

During the last half of the 1920's the Diesel-electric switcher began to take its place at a steadily increasing rate. A decade later Diesel-electric road locomotives began to take over passenger trains. In 1941 a Diesel-electric locomotive was tried out in freight service on the Santa Fe. By the end of the war period more than 600 Diesel locomotives had been ordered, either exclusively for freight service or for interchangeable use in freight and other services. Substantially all of the \$1 billion spent for locomotives during these last four years has gone for Diesel-electric locomotives.

Expenditures for passenger-car betterments, which ranged between \$40 million and \$58 million annually



How the capital expenditures for motive power and rolling stock have been divided between freight-train cars, passenger-train cars, and locomotives — The plotted values for passenger cars are ten times the actual values to clarify the trend

during 1923 to 1930, inclusive, rose sharply again at the end of the depression to \$42 million and then dropped below \$20 million until 1941 when expenditures rose to \$30 million. During 1941 and 1942 expenditures were between \$20 and \$30 million. After practically disappearing during the next two years they rose to \$30.8 million in 1945. Since then the upturn has been sharp, reaching \$80 million in 1947. From 1936 to 1945, inclusive, 2,166 new passenger-train cars were installed by the Class I railroads. From 1946 to 1949, inclusive, something over 3,100 were installed. During the latter period gross capital expenditures for passenger-train car additions and betterments have been \$376 million.

More Dollars per Unit

An outstanding change which has taken place in the matter of capital expenditures since the post-World War I rehabilitation period is the great increase in the price per unit of equipment purchased. This is due to two causes: increases in the complexity and capacity of the equipment or in the quality of some of the materials used—which have increased its cost but have also increased its value to the purchaser—and increases in material prices and wage rates which have increased the cost of new equipment without increasing its value to the purchaser except as this has been compensated for by increases in railway rates.

In the table of expenditures for equipment, by periods, is shown the average expenditure per new unit purchased for freight cars and locomotives. These are not an accurate index of the overall price increases for new equipment, because the expenditures for other betterments are included. For the two classes of equipment for which these figures are shown, however, the amount of such betterments is believed to have been sufficiently stable so as not seriously to have vitiated the trends indicated. For passenger-train cars such stability in the amount spent from year to year for betterments to old passenger cars has not been maintained, and unit amounts arrived at by that method would be misleading.

The Outlook

Gross capital expenditures during 1949 (three months estimated) amounted to \$1.285 million, of which \$967 million were expenditures for equipment and \$318 million were for road betterments. For the first quarter of 1950 estimates of total expenditures on all accounts of 128 of the 133 Class I roads reported by the Bureau of Transport Economics and Statistics of the I.C.C. in its December "Monthly Comment" amount to \$201 million, which compares with \$343 million actually spent during the first quarter of 1949. This is a reduction of 41.4 per cent. Equipment estimates are down 48.5 per cent from \$272 million a year ago to \$140 million. Road estimates are down 14.4 per cent—from \$71 million to \$61 million.

The post-World War II equipment rehabilitation job is in an unfinished state. The accumulation of excess wear and tear which freight cars suffered without adequate rebuilding and repairs during the war requires further replacements and additions which will take expenditures equal to or greater than those of the past four years for as many years to come. Programs for the

replacement of steam locomotives with Diesel-electrics are well advanced on some railroads. Others are contemplated, however. Passenger-train rehabilitation has been pushed since passenger-car deliveries were resumed after the war. As has already been pointed out, probably a larger proportion of the money spent in the betterment of the passenger-car inventory went for modernizing old cars than was the case with either freight cars or locomotives.

First quarter estimates show clearly that 1950 will start off with a sharp reduction in expenditures of the railroads for equipment. But with the end of artificial restrictions on the production of coal and the healthful effect this will have on other production, the need for more freight cars will stimulate resumption of expenditures which, if it goes far enough, will also relax restrictions on expenditures for new locomotives and passenger cars.

How Property Improvements Reduce Costs

By **MERWIN H. DICK**
Engineering Editor

During the past 25 years the expenditures that the railroads have made for improvements to their roadway and structures have fluctuated widely, although not nearly as much as have the expenditures for equipment. After reaching a peak of \$544 million in 1930 the expenditures for improvements to the fixed properties dropped precipitately to a low of \$88 million in 1933. Following that year there was some recovery which continued on a somewhat accelerated basis after the start of World War II. Following the war the improved financial condition of the roads, combined with the recognized urgent need for improvements designed to promote economy and efficiency, caused the upward trend to continue. In 1948 the expenditures reached a postwar high of \$356 million, although this level was very nearly sustained in 1949 when the outlay for this purpose was estimated to be \$318 million according to reports to the Bureau of Transport Economics and Statistics of the I.C.C.

Will History Repeat Itself?

Based in part on the past expenditures for fixed-property improvements, as briefly outlined above and as depicted in more detail by the accompanying chart, and in part on other factors to be discussed later, it is possible to develop several lines of reasoning bearing on the possible future trend of such expenditures and their effect on railway operating expenses. For instance, since some of the underlying factors now affecting the railway industry are similar to those that prevailed following World War I, it is interesting to speculate on the possibility of history repeating itself with respect to the trend of capital expenditures in the two postwar periods.

During the first world war the volume of construction activity on the railroads of the types required to promote



The modernized freight classification yard of the Chicago, Rock Island & Pacific at Armourdale (Kansas City), Kan., seen here from the crest of the hump, was among the larger yard-improvement projects to be completed in 1949. It was estimated that the better facilities at Armourdale will produce economies sufficient to pay for the cost of the work in less than two years

efficiency and economy was far below requirements. At the end of World War II, because of inadequate expenditures during the long depression, and the limitations placed on construction activity during the war by government restrictions, the railroads again found themselves with a fixed plant that had lagged far behind requirements in many respects. During the period of government operation that accompanied and followed World War I large increases in the wages of railway employees were put into effect, so that when the railways were returned to private operation they were encumbered with greatly inflated operating costs. Every railway man knows what happened in this respect during and subsequent to World War II, culminating in the large increase in hourly wages that went into effect on September 1, 1949, as a consequence of the advent of the five-day week.

To make up for the ground lost during World War I, and in part to increase operating efficiency as a means

of counteracting the higher wages that had come to prevail, the railroads as a whole undertook large property improvement programs in that postwar period. As shown by the chart, these expenditures were sustained at high levels for many years and, in fact, did not reach their peak until 1930, or 12 years after the close of the war.

If the analogous conditions between the two postwar periods with respect to the condition of the properties and the need for operating economies are to be reflected also in the expenditures for property improvements, it is plainly evident that the upward trend in such expenditures that has been in evidence since V-J Day is merely the prelude to a long period of sustained activity. An added reason for continuing large improvement programs—a reason that was not in evidence in the previous postwar period in the same degree as at present—is the greatly intensified competition in the transport field today, with the consequent necessity for

GROSS CAPITAL EXPENDITURES FOR EQUIPMENT ADDITIONS AND BETTERMENTS AND UNITS OF NEW EQUIPMENT INSTALLED—CLASS I RAILWAYS

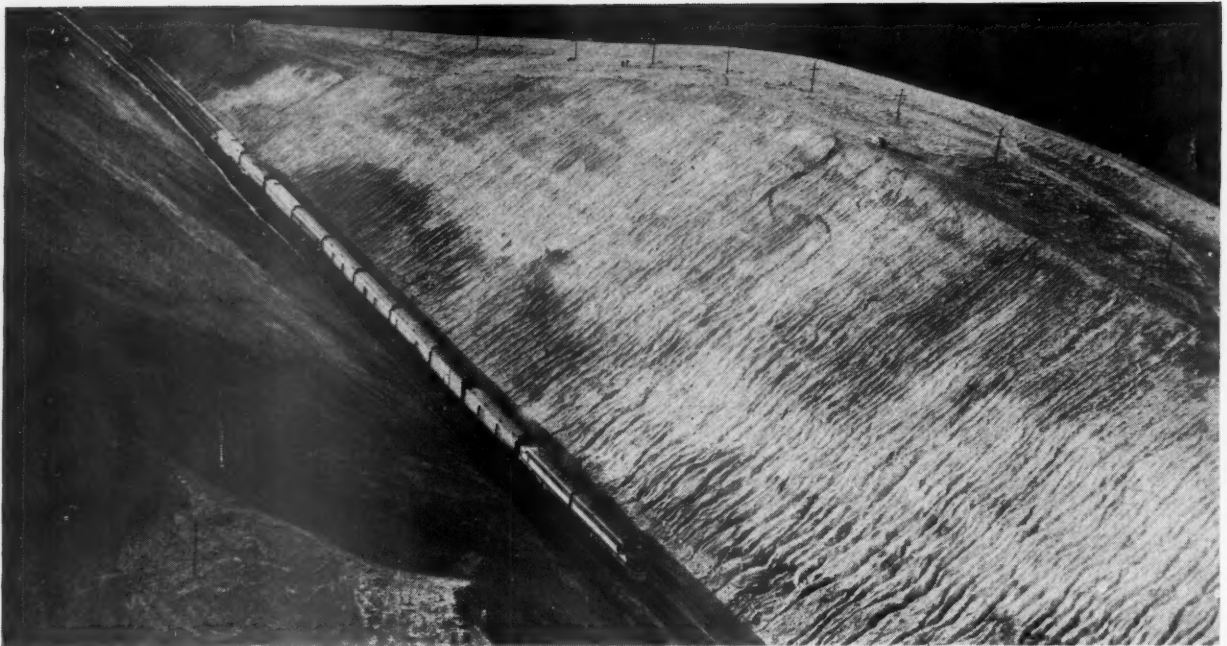
	Freight Cars			Locomotives			Passenger-train Cars*		Gross expenditure for equipment† (000)
	Expenditures for the period (000)	New cars installed	Average expenditures per new car	Expenditures for the period (000)	New locomotives installed	Average expenditures per new loco.	Expenditures for the period (000)	New cars installed	
1923-1926	1,136,504	535,114	2,120	479,463	10,415	46,000	192,563	‡	1,885,369
1927-1930	625,984	280,157	2,240	287,630	4,889	58,600	178,445	‡	1,162,576
1931-1935	143,355	48,285	2,980	89,046	457	194,000	49,593	‡560	296,270
1936-1939	450,326	154,069	2,920	158,324	1,089	145,000	98,128	1,219	730,777
1940-1945	1,006,991	312,352	3,230	696,813	4,806	145,000	110,628	947	1,887,839
1946-1947	407,653	96,280	4,250	319,936	2,110	151,000	127,271	1,339	884,918
1948-1949	1,264,874	\$	—	1,041,176	\$	—	375,531	\$	2,770,276

* Average expenditures per new passenger-train car distorted by betterments to old cars

† Includes "other equipment"

‡ Not available for 1923 to 1931, inclusive

§ Not comparable with previous years



In addition to speeding train movements, line-improvement projects result in operating economies. This view shows a deep cut on a 5½-mi. relocated line that the Missouri Pacific built to reduce grades and curvature over Tip Top mountain in Missouri

the railroads to make whatever improvements are required to help them to render the kind of service that will attract the business.

Effect on Operating Expenses

Two factors regarding the fixed-property improvements that have been made since the war may be discussed in the light of their effect on the future operating expenses of the railroads. One of these factors is the substantial nature of the expenditures. For the four years, 1936 to 1939, inclusive, the average annual expenditures of the Class I roads for improvements to roadway and structures amounted to \$142 million, whereas in the four-year period, 1946 to 1949, inclusive, the average annual expenditures had increased nearly 120 per cent to \$308 million. Even when full consideration is given the increased costs that had come into effect it is apparent that a substantial increase occurred in the actual amount of improvement work performed by the roads. Moreover, even when considered without regard to the specific nature of the work done, such large-scale improvements are certain to have a salutary effect in promoting efficiency and in reducing operating expenses.

Of equal importance with the volume of the improvements in determining their effect on operating expenses is their changed character as compared with those of former years. What has happened is that the railroads long since achieved maturity in physical growth, and are now concentrating on improvements whose primary objective is to promote operating efficiency rather than to add to capacity. This may seem to be stating an obvious truth, but the point needs to be mentioned to be certain that its full significance is realized. It is

illustrated by the decline in the expenditures made for additional main tracks. For the four-year period, 1927 to 1930, inclusive, \$499 million, or 25 per cent of the total expenditures for fixed-property improvements, were spent in constructing such tracks, whereas for the four-year period, 1946 to 1949, only \$74 million, or 6 per cent of the total outlay, were expended for this purpose.

Present-day expenditures for improvements are being made primarily for the purpose of reducing operating expenses either through lower maintenance costs or greater operating efficiency, or both, although in many instances the desire to render better service is a strong motivating factor. Thus, major attention is being claimed by such categories of work as the modernization of yards and terminals, the reduction of grades and curvature, the installation of modern signaling and communications, and the strengthening of the track structure by replacing worn-out rail with material of a heavier section. The progress that has been made in the latter respect is illustrated by figures given in a recent issue of the "Monthly Comment" of the Bureau of Transport Economics and Statistics of the I.C.C. These show that, whereas only about 40 per cent of the main-track mileage of the Class I roads had rail weighing 100 lb. or more per yard at the end of 1939, this proportion had increased to more than 53 per cent by the end of 1948.

Examples Reveal Large Savings

There is obviously no way of determining precisely the extent to which railway operating expenses in the aggregate are being reduced, and will be reduced in the future, by the property improvements made in recent years, but a general conception of the possibilities may

be obtained by a study of the results anticipated from specific projects of the various types. Probably one of the most prolific sources of operating economies, as well as a means of speeding freight traffic, is afforded by projects for replacing obsolete freight classification yards with modern, mechanized facilities. One project of this type, involving the construction of a large hump-retarder yard, which has recently been completed at a cost of about \$3.5 million, is expected to produce direct operating savings equivalent to an annual return of more than 30 per cent on the investment. As a result of another yard modernization project, also completed in 1949, the savings are expected to pay for the cost of the work in about two years. In the savings expected, these projects, it should be emphasized, are typical of many that have been carried out in recent years.

Line-improvement projects, involving the reduction of grades or curvature, or both, are also productive of important savings in operating costs, in addition to the speeding up of train service which usually results from them. When curves are flattened or eliminated, savings are made in track-maintenance costs; when grades are reduced tangible savings are forthcoming, especially if helper engines are thereby eliminated; and where such work permits higher train speeds there are operating savings associated with the reduction in train time. Because of these factors it is not uncommon for line-improvement projects to produce direct savings amounting to 20 per cent or more on the investment.

C.T.C. Produces Big Savings

Modern signaling facilities, including centralized traffic control, in addition to other recognized benefits, are a source of important operating economies. In a recent study involving seven such projects the annual savings in operating expenses ranged from 12.9 per cent to more than 100 per cent of the cost, and in each case the return was figured after a deduction had been made from the savings to cover interest charges on the capital investment.

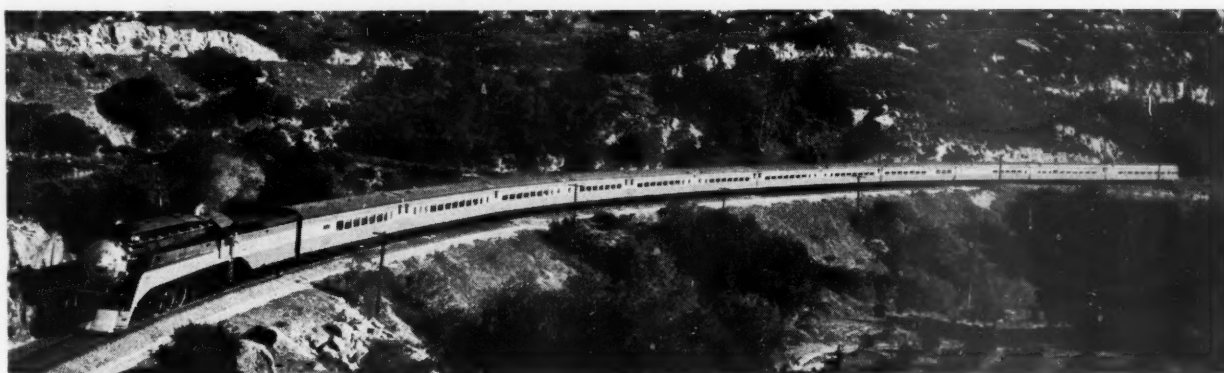
It is a well-known fact that the use of heavier rail, along with the other components of the modern heavy-duty track structures, results in stiffer track that requires less attention on the part of the track-maintenance forces in keeping it to the desired line and surface,

although it is not easy to state in definite terms the savings that may be expected when rail is replaced with a heavier section. However, the chief engineer of one road has compiled figures that give a clue as to the economies to be expected. Over a period of years this road carried out a program to replace the rail in its main-line tracks, which originally weighed 100 lb. per yard, with progressively heavier sections up to 152 lb. per yard. During this period a reduction of 64 per cent occurred in the number of man-hours required to maintain and renew this company's main-line tracks. While there were other contributing factors the heavier rail sections were given the major credit for bringing about this reduction in man-hours.

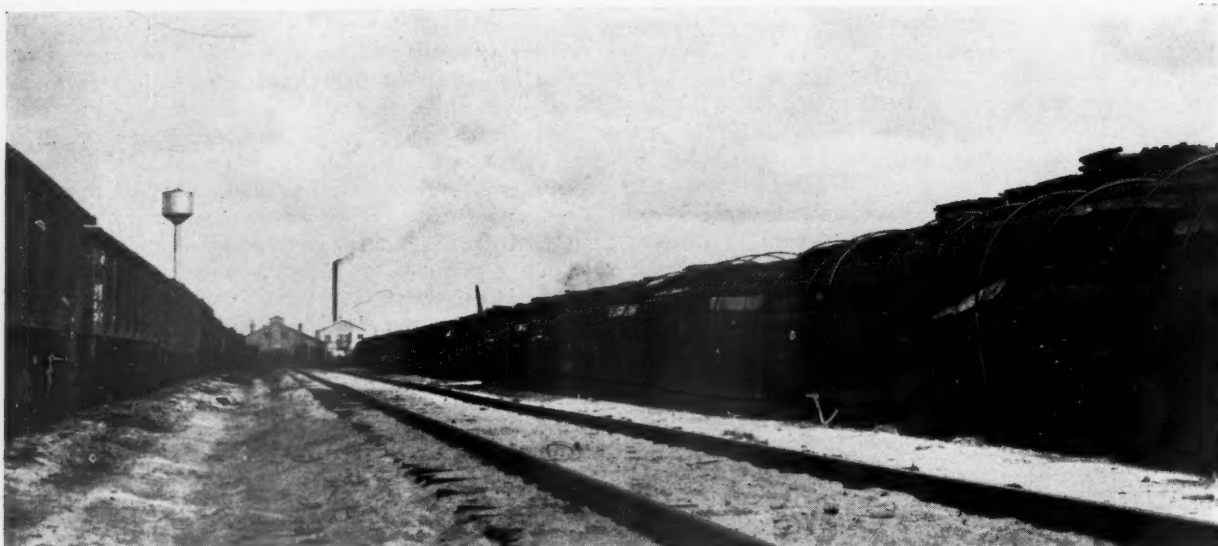
Bigger Rewards Now Possible

The large increases in the hourly rates of pay for railway employees that have been put into effect in recent years have not only intensified the necessity of carrying out expense-saving improvement projects but have actually had the effect of making it easier to justify the cost of such work. In other words a given project, whether designed to increase operating efficiency or to effect savings in maintenance expenses, will now produce substantially larger savings than it would have a few years ago. In fact, some projects not previously worth while, on the basis of the savings to be expected, will now effect important economies. A number of roads have found that, as a result of the increased hourly wages of crossing watchmen that became effective with the 40-hr. week, they are now warranted in undertaking large programs to install automatic protection devices at highway crossings at locations where the cost of this work could not previously be justified.

The urgent need for effecting operating economies is an insistent force that will continue to confront the railroads with the necessity of making large annual expenditures for improvements to their fixed properties. How much are they justified in spending for this type of work? Probably no two persons would give the same answer to this question, but the opinion of one railroad president is that the roads as a whole must spend about \$700 million annually for the next ten years to improve their fixed properties if they are to hold their own against their competition and stave off government ownership.



The Southern Pacific's "Daylight" in Santa Susana Pass, Calif.



Traffic Losses Reduce '49 MATERIALS BUYING

Modest price decreases help railroads—Delivery time for materials reduced, making possible smaller inventories of most supplies

By J. W. MILLIKEN

Associate Editor — Purchases & Stores

Railroad purchases of materials and supplies during 1949 (excluding orders for new equipment) did not come up to the dollar volume of 1948. The explanation for the decrease is many sided. Primarily, of course, the volume of traffic handled in 1949 was much below 1948, with correspondingly unfavorable earnings. Mainly responsible were the complete or partial shut-downs of the coal mines during a good part of the year. Another factor was that prices of many materials and supplies purchased by the railroads took a drop during 1949, while delivery time on most items improved, making it possible for the railroads to reduce the amount of protective stock carried, and encouraging them to consume some inventory rather than spend money in a period of unstable business conditions. Nevertheless railroad purchases of materials, supplies and fuel, in 1949, reached an estimated total of \$1,665 million.

The effect of the mine strike is indicated by the fact that up to December 4, 1949, the number of cars of coal loaded was 2,714,728 less than in the same period of 1948. In 1948 the railroads spent \$51 for materials, supplies and fuel for each car of freight loaded. If the same ratio held last year, another \$100 million would have been spent by the railways had the coal kept moving steadily from the mines. The steel strike also probably took away \$25-30 million of material purchasing power. If these figures could have been added to the total of actual 1949 purchases the result would have been a good deal closer to the 1948 figure.

In 1949 the railroads got the benefit of some relief from the 1948 prices paid for materials, supplies and fuel. A country-wide price survey by *Railway Age* covering 16 items, purchases of which run to about 33 per cent of the railroads' materials expenditures (excluding equipment), shows these prices to be down on the average about 5 per cent. This figure includes no weighting for quantity buying and the actual figure may, therefore, be closer to 3 per cent. Assuming that the railroads would have bought the same physical quantities of material in 1949 as they did in 1948, barring strikes, that decline in itself would have cut the total of railway purchases by approximately \$65.5 million.

The railroads' chief price relief came in fuel and forest products. The average price of Diesel fuel (to the reporting roads) dropped from \$0.1018 per gallon in 1948 to \$0.0899 in 1949. In view of the rapid growth in the consumption of this fuel, such a price decline meant a not inconsiderable saving to the railroads. Coal prices also dropped slightly, the price paid per ton being on the average 1.75 per cent less.

The prices of forest products—another group of materials for which the railroads regularly spend a great deal—dropped substantially last year. Car flooring, for example, declined an even 10 per cent for the roads

Facing page — Prices of cross-ties dropped during 1949. Installations also decreased with the furloughing of track forces during the coal and steel strikes

Right—The paint room of the Nickel Plate's new general storehouse at Lima, Ohio. Paint for freight cars cost about 7 per cent less in 1949 than in the previous year



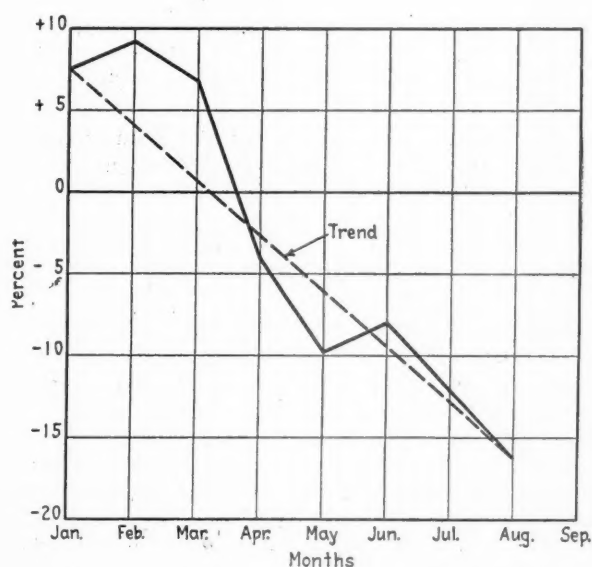
reporting prices on this product to *Railway Age*. Cross-ties, too, cost the railroads less per unit in the year just closed. Individual carrier reports ranged from "no change" to decreases of as high as 45 per cent on the lower grades of ties, with the average being 12.9 per cent. Generally speaking, the decreased cost of car flooring and cross-ties favored the Western lines more than it did carriers in the East and South.

Material Deliveries Improved

The cost of steel and iron products showed few changes until the last two weeks of 1949 when some producers raised prices. (These new prices, however, had little effect on total purchases for 1949.) Up until mid-December prices of rail and spikes were exactly the same as they had been a year earlier. On December 16 the price of rail went up about six per cent, axles about one per cent, and tie plates went up from \$81 per ton to \$84. While these are prices on standard items, there are indications, also, that the railroads will be asked to pay more for deviations from what the steel producers term standard products.

As reported in another article in this issue, the value of railroad material inventories on hand has declined steadily since April 1, 1949. While falling prices have had something to do with this decline, two other factors, of perhaps even greater importance, have affected the railroads' inventories. The main one of these has been the improvement in manufacturers' delivery schedules, which has made it possible for the railroads to carry smaller quantities of materials in stock and still protect most of their requirements. The other factor has been the desire of railroad managements to keep as little tied up in inventories as possible, so that the cash position of the roads might be improved. The cutting of lead times on deliveries, of course, has made it possible to achieve this goal. The result has been that, dollarwise, the railroads last year were consuming more than they purchased. Some carriers report that they have about reached the bottom of the barrel, having used up their inventories to the point where they

are back in the market doing quantity buying. Most of the railroads report, though, that despite having made holes in their inventories, they are not yet in a "dangerous" position, because of the comparative ease with which supplies are procured. Once shop activity is resumed on any large scale, however, most purchasing agents expect that they will be back in the market. Since it seems unlikely that many more months will go by without some sort of settlement of the coal mining situation, and with most prognosticators expecting a good year for business in general, there are many reasons suggesting that 1950 may see a renewal of railroad purchasing at a rate closely approaching 1948.



This chart shows how much, percentagewise, railroad purchases, in dollars, of materials, supplies and fuel were in excess of, or less than, consumption of similar items in the first 8 months of 1949. No attempt was made to adjust the figures for price changes during the year

MORE PAY for LESS WORK on the Railroads

By R. G. LEWIS
Associate Editor

**Fourth postwar year fails to bring stabilization to pay scale—
Costly 40-hour week won by non-operating employees is now
sought by yard forces—Efforts to make jobs on Diesels fail**

The year 1949 was not as dramatic a year for the railroads' "U.N."—the carriers' conference committees—as 1948. There was no imminent nationwide strike, or seizure of the roads by the government. But if, in hasty retrospect, the unions' 1949 gains seem any less spectacular than those of '48, it may be because the postwar pressure of new demands has become so regular that it has come to be regarded as normal.

In prewar years, for example, the 1949 demands of the conductors' and trainmen's organizations for a 40-hr. week with pay for 48 hr. for yard-service employees—presented on March 15—would have evoked serious attention in the nation's press. Instead, they were received with little ado, and are little realized outside of the industry. This is so despite the fact that these demands include, as a rider, a basic rate increase of 21½ cents an hour; time and one-half for work in excess of 8 hr. on any one day, and for all work on Sundays and holidays; a graduated scale of pay, according to weight on drivers of the locomotive, for determining a conductor's or trainman's earnings; payment for initial terminal delays; and a half-score more like proposals. As noted on the accompanying "Calendar of Labor and Wage Events," the switchmen and the firemen, successively, followed the conductors and trainmen in seeking a 40-hr. week for yard forces. (The latter organization, however, omitted the "rider.") Even on the railroads, these union proposals have been received as though they were unspectacular—not because management is "going soft," but because it is growing calloused.

Five-Day Week for Railroaders

The costliest settlement of 1949 was the acceptance of an emergency board's recommendation for a 40-hr. week, effective September 1, and a 7-cent hourly wage increase, retroactive to October 1, 1948, for nearly a million non-operating employees—railroaders from the rank of dispatcher to red cap and from boilermaker to crossing watchman. Their unions had been hostile to a short work-week when it would have been relatively cheap. They deliberately sought exemption from the provisions of the Fair Labor Standards Act in 1938—which made the shorter work-week mandatory in other industries so as to spread the available employment over a greater number of workers. Their insistence on a 40-hr. week—without any reduction in pay—came at a time when there was full employment. Its application

amplified the ill-effects of generally increasing costs in the face of declining revenues.

In recent years it has come to pass that a "victory"

for management usually means settlement of demands on a compromise basis. "The boys" always get *something*. Not so, however, with the separate—and competitive—demands of the Brotherhood of Locomotive Engineers and the Brotherhood of Locomotive Firemen & Enginemen for extra crew members of their respective crafts in the cabs of multiple-unit Diesel road locomotives. Presidential emergency boards hearing the two cases recommended that the organizations' demands be denied categorically. The engineers announced that they would not accept the board's recommendations. Beyond this, they were silent. The firemen—more bitter in renouncing the board's opinion—threatened to strike, then scheduled further "talks" with the carriers.

A highlight of the year—and proof that it is still possible to reach accord without mediation, arbitration, strike threats or emergency boards—was the settlement, on April 29, through direct negotiations, of the operating unions' vacation demands. Both sides appear to have given a little and gained a little, and nobody lost a day's wages or a dollar's revenue.

Two important system strikes occurred during the year—one on the Wabash, lasting a week, and one on the Missouri Pacific, closing that railroad down tight for 45 days. Both strikes grew from railroad resistance to the "shot-gun" settlement of backlogged grievances which, in accordance with the provisions of the Railway Labor Act, should have been ruled on by the National Railroad Adjustment Board. Part of the reluctance of the unions to resort to the procedure prescribed was due, they stated, to fear of delays consequent on the heavy docket under which the First Division of the N.R.A.B. was laboring. The situation complained of was at least partially corrected on November 1, following a congressional appropriation providing funds for the operation of two supplemental First Division boards, a measure growing out of joint carrier-brotherhood recommendations made earlier in the year.

More Gravy Trains

As if to close the year out with assurance that there will be no stabilization of wage costs in 1950, and no let-up in the unrelenting demands for more and more, the Brotherhood of Railroad Trainmen announced in mid-October that it would launch an intensive campaign "against the unreasonably long and unsafe trains," aiming for a freight train limit of 70 cars, and passenger trains not to exceed 14 cars.

CALENDAR OF LABOR AND WAGE EVENTS—1949

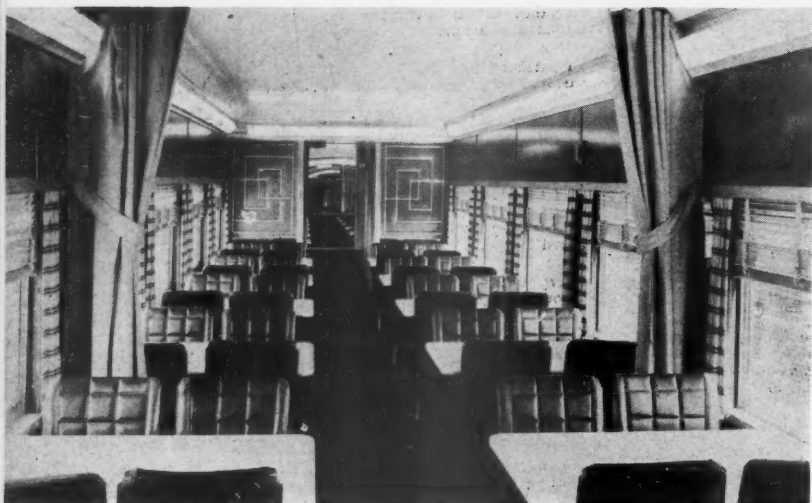
(At the beginning of 1949 the railroads had before them proposals of the Brotherhood of Locomotive Firemen & Enginemen for extra firemen on road Diesels; a proposal of the Brotherhood of Locomotive Engineers—coupled with a threat to strike on 18 roads—for an extra engineer on Diesels; a proposal of the five operating unions for longer vacations; and the recommendations of an emergency board that a 40-hr. week with 48-hr. pay, and a general increase of 7 cents an hour, be awarded to the non-operating employees.)

Jan. 5	Negotiations on 40-hr. week and pay increase for non-operating employees resumed at Chicago, using as a basis for discussion the Dec. 17 recommendations of the emergency board	Mar. 15 to Mar. 22	Four operating brotherhoods strike on Wabash to press settlement of backlogged grievances. Settled by direct negotiation
Jan. 13	National Mediation Board reconvenes at Chicago with representatives of the carriers and the B. of L.E. on demand for extra engineer on Diesels	Mar. 17	O. R. C. announces Pullman car conductors will strike on Mar. 31 over the handling of certain grievances
Jan. 14	Carriers and B. of L. F. & E. meet to discuss the unions' June 30, 1947, demand for an extra fireman on Diesels, and other rule changes	Mar. 20	Carriers and non-operating employees reach accord on 40-hr. week to be effective Sept. 1, and 7-cent wage increase retroactive to Oct. 1, 1948
Jan. 15	B. of L. E. notifies National Mediation Board that it will accept arbitration of dispute over employment of extra Diesel engineers	Mar. 23	Emergency board ends hearings on B. of L. E. demands for extra Diesel engineer
Jan. 15	Carriers and B. of L. F. & E. terminate negotiations and invoke services of the Mediation Board	Mar. 25	Negotiations on vacations for operating employees begins at Chicago
Jan. 18	Mediation Board begins conciliatory efforts to bring about settlement of B. of L. F. & E.'s demand for extra Diesel firemen	Mar. 25	Dispatchers and red caps get 40-hr. week on same basis as other non-operating employees (see Mar. 20)
Jan. 20	Carriers reject proposal that they submit B. of L. E. demands for extra Diesel engineers to arbitration. Mediation Board terminates its services in the case	Mar. 26	Mediation Board intervenes in Pullman conductors' dispute; strike postponed
Jan. 24	B. of L. E. sets strike for 6 a.m. Jan. 31 on 18 Western railroads	Apr. 11	Emergency board recommends rejection of B. of L. E.'s demand for extra Diesel engineer
Jan. 28	President Truman creates emergency board to investigate engineers' demands; appoints George W. Taylor, Grady Lewis and George E. Osborne members	Apr. 28	B. of L. E. announces non-acceptance of emergency board's Apr. 11 recommendations
Feb. 2	Carriers and nonoperating unions agree to ask the emergency board to render assistance in suggesting how recommendations of Dec. 17 should be interpreted	Apr. 29	Carriers and operating unions settle vacation demands through negotiations
Feb. 7	Non-operating emergency board reconvenes at Chicago to assist in interpreting application of its recommendations and reaching accord thereon	May 17	O.R.C. and Pullman reach agreement in conductors' dispute
Feb. 7	Emergency board hearings open at Chicago on B. of L. E. demands for extra engineer on Diesels (a 45-day extension of time in which to report granted Feb. 14, making the report due April 13)	June 27	Emergency board reconvenes—at New York—to hear B. of L. F. & E. demand for extra firemen on Diesels
Feb. 15	President Truman creates emergency board to investigate B. of L. F. & E.'s demand for extra firemen on Diesels; appoints same three members comprising B. of L. E. board (named Jan. 28)	July 7	Railway Employees Department, A. F. of L.—representing Diesel maintainers—requests right to intervene in firemen's Diesel case. Request denied; organization permitted to file a statement of position
Feb. 23	Emergency board hearings in firemen's Diesel case open at Chicago. Recess until June 27. (Extension of time in which to report until Aug. 15 requested, and granted on Feb. 28)	July 27	President Truman approves second extension, until Sept. 19, of time for emergency board to report on firemen's demands
Feb. 24	Engineers' emergency board recesses until March 14	Aug. 23	Emergency board ends firemen's hearings
Mar. 8	Carriers and non-operating unions agree to let the emergency board act, in effect, as an arbitration board in deciding application of the 40-hr. week	Sept. 1	Forty-hour week goes in effect for all non-operating employees
Mar. 13	Board rules on 40-hr. week application	Sept. 9 to Oct. 23	Four operating brotherhoods withdraw from service on Missouri Pacific protesting backlogged grievances. Settled by direct negotiations
Mar. 15	Order of Railway Conductors and Brotherhood of Railroad Trainmen serve notice of demands for 40-hr. week for yard employees and other rule and rate changes (carriers serve counter demands)	Sept. 19	Emergency board recommends rejection of B. of L. F. & E.'s demand for extra fireman on Diesels and other rule changes
		Sept. 20	Switchmen's Union of North America serves notice of demands for 40-hr. week and other rule and rate changes
		Sept. 22	Carriers, B.R.T. and O.R.C. meet at Chicago to negotiate demands for 40-hr. week for yardmen, rate and rule changes
		Oct. 9	B. of L. F. & E. announces non-acceptance of emergency board recommendations
		Oct. 11	Carriers and B. of L. F. & E. meet to discuss Diesel emergency board recommendations (recessed Oct. 12)
		Nov. 1	B. of L. F. & E. serves notice of demands for 40-hr. week for yard employees
		Dec. 14	B.R.T. and O.R.C. break off 40-hr. week negotiations
		Dec. 15	B.R.T. and O.R.C. circulate strike ballots. Carriers invoke Mediation Board's intervention

(At the close of 1949, the railroads had before them proposals of all of the train-service organizations, except the B. of L. E., for a 40-hr. week for yardmen and other rate and rule changes.)



PASSENGER CAR High Sp



*Typical examples of the
passenger cars built and
installed by American rail-
roads during the past year*

Top—The Strota Dome on the
Baltimore & Ohio "Columbian"
built by the Pullman-Standard
Car Manufacturing Company

Above—A Chicago & North
Western dining car built by
American Car & Foundry Co.



Above—The dining room of a Pennsylvania dor-
mitory-kitchen-diner built by the Budd Company



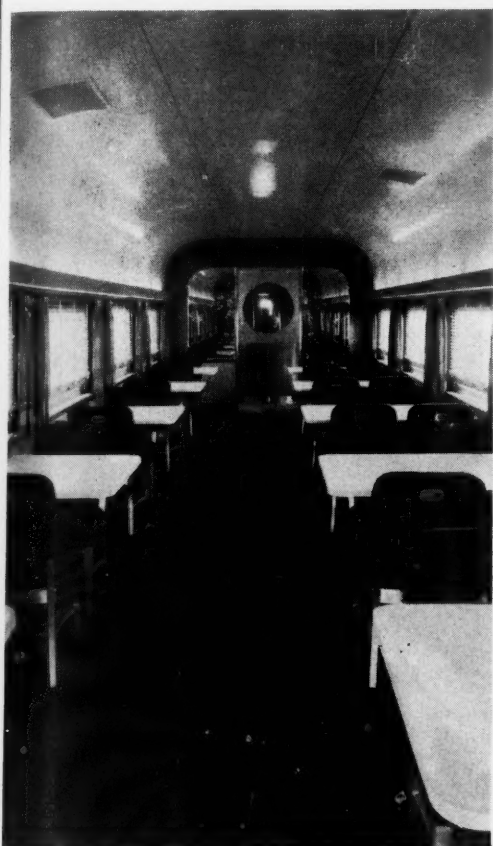
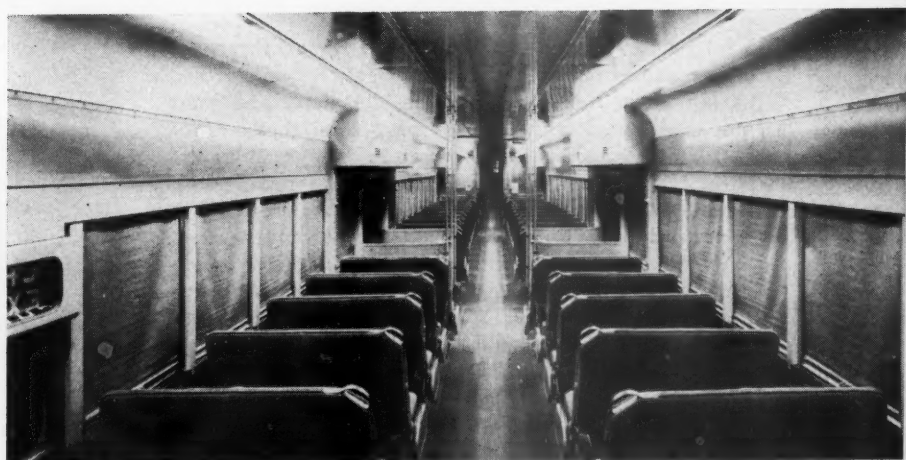
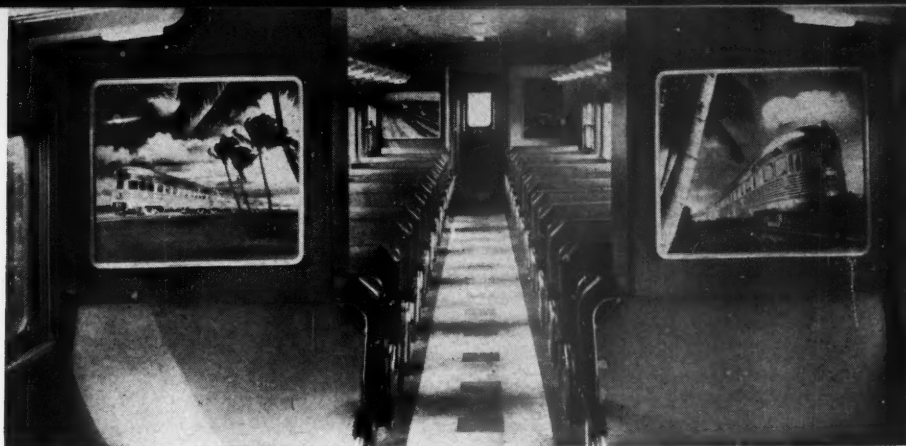
Left—Interior of the American Car & Foundry
Co. "Talgo" train, showing two body units

igh

Spots of 1949

Right above—First of the Budd multiple-unit rail Diesel cars. Power plants are underneath the car body

Right—This Chicago, Rock Island & Pacific suburban car built by Pullman-Standard seats 100 passengers. There are two entrance doors and steps on each side of the car



Above—The dining car of the Norfolk & Western "Powhatan Arrow" built by the Pullman-Standard Car Manufacturing Company

Above right—A spot in a "California Zephyr" lounge built by the Budd Company

Right—A club-lounge car for the Union Pacific built by American Car & Foundry Co.



More MECHANIZATION for Maintenance

Lower purchases of work equipment in 1949, plus stimulus to increase production and hold down costs under the 40-hr. week, portend larger buying for 1950 work programs

The year 1949 was another big year for maintenance-of-way and structures work equipment, but it was not as big as had been expected at its start, and total purchases again lagged somewhat behind those of recent years. With this lag to overcome, however, plus the effect of the recent wage and hour agreements affecting roadway and structures employees, it seems certain that the record of 1949 will be surpassed by the years ahead.

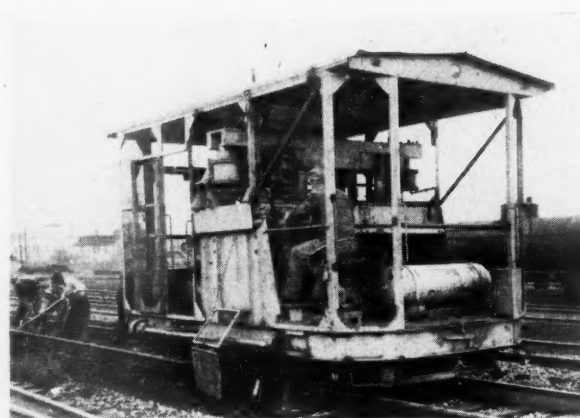
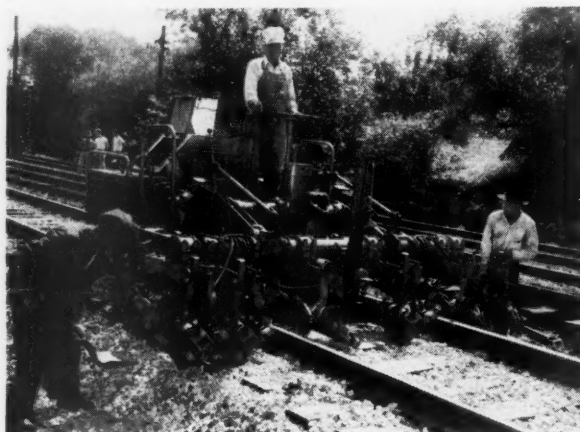
Power tools and machines have completely "taken over" in the maintenance-of-way and structures departments of the railroads. No longer is it a question of whether operations should be mechanized, but rather, which of the machines available should be used, or whether more suitable, more efficient machines can be found to do the work.

Based upon information furnished to *Railway Age* by all except three of the more important roads of the United States, Canada and Mexico, it is estimated that the roads of these three countries ordered in 1949 a total of 8,700 units of power tools and machines of all kinds for roadway, track, bridge, building and water service work, at a total estimated cost of approximately \$17,500,000. This represents a reduction of 600 units, and about \$1,200,000, from the purchases made of similar equipment in 1948, and a still larger drop in both from 1947.

Purchases in 1947 totaled 9,500 units, at an estimated cost of \$19,100,000, and in 1946 were 9,939 units at a total cost of approximately \$15,400,000. Thus, while 1949 purchases were down somewhat compared with those in both 1948 and 1947, and were off considerably from the record number of units purchased in 1945, they were again larger than in any year prior to 1944, when the roads purchased 9,984 units at a total cost of approximately \$14,400,000. Dollarwise, due to increased costs, 1949 purchases were higher than in any year except 1948 and 1947, and equaled those in 1945.

Influenced by the further seven cents-an-hour wage increase effective October 1, 1948, and by the coming of the 40-hr. week, which zoomed wage rates to as much as three times prewar levels, largely increased

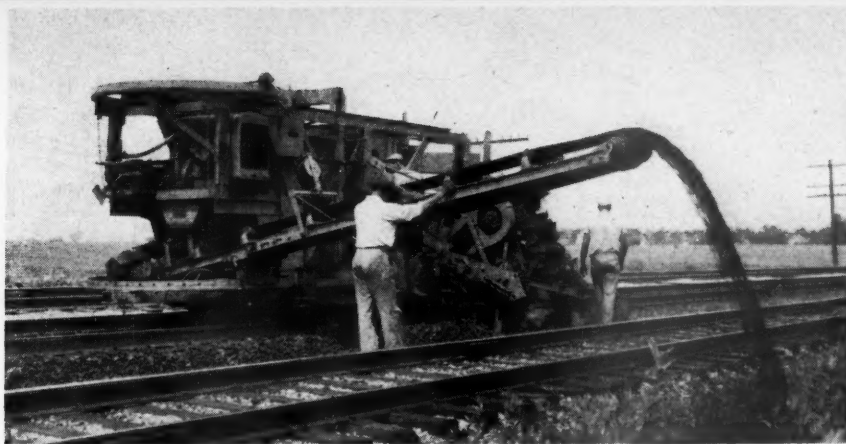
Illustrations, reading down—Machines that power-tamp a complete tie at a time are taking over on many roads for out-of-face ballasting and surfacing work.—Power cribsbers of several types remove the fouled ballast from between the ties preparatory to cleaning, doing work that was prohibitive with hand tools.—Power tools and machines lighten, speed up and increase the safety of nearly all bridge maintenance and repair work



Forces

By NEAL D. HOWARD

Western Editor



No less than three new designs of large-production ballast cleaning machines were given road tests in 1949, looking to their extensive use in 1950

purchases of work equipment for use by the maintenance-of-way and structures forces are inevitable in the years immediately ahead. And they are the more inevitable for the very reason that the larger purchases expected in 1949 were nipped by the coal and steel strikes, and the three-day work week in the mines much of the time when they were not actually on strike, which reduced railway traffic and earnings and resulted in sharp reductions in overall maintenance-of-way and structures programs during the latter half of the year.

Several Factors Retarded Purchases

Other factors in the 1949 picture which tended to hold down the number of units purchased during the year were: The practice on some roads of leasing certain types of roadway machines from manufacturers, particularly during the development stage of these machines; the practice of utilizing the services of well-equipped contractors to carry out roadway and track maintenance programs; and the trend toward the purchase and use of larger, more expensive, and more highly productive units of equipment.

Despite unfavorable factors and restricted purchases, maintenance officers continued increasingly equipment-minded in the year just past. At least ten roads purchased a record amount of equipment, one tripling its highest previous expenditures. Another nine roads purchased more equipment than in any year except 1944 or 1945, when their purchases reached a peak.

At the same time, road after road continued to experiment with new and improved machines and to share with the manufacturers in the development of others. Outstanding in this regard is the interest that has been shown in large-production power tamping and surfacing equipment, in track cribbing machines, and in large-capacity power ballast cleaning and renovating machines. No less than three new large power ballast cleaners, ranging in cost from \$60,000 to \$100,000 each, and in one case designed to clean up to one mile of track a day, were developed and given road tests during the year.

Annual Expenditures for Maintenance-of-Way and Structures Work Equipment, 1937-1949		
	Units	Expenditure
1937	3,310	\$ 5,000,000
1938	1,376	2,000,000
1939	3,547	6,000,000
1940	5,414	7,250,000
1941	8,007	10,500,000
1942	7,612	10,270,000
1943	8,507	12,300,000
1944	9,984	14,400,000
1945	11,733	17,500,000
1946	9,939	15,400,000
1947	9,500	19,100,000
1948	9,300	18,700,000
1949	8,700	17,500,000

Other important developments of 1949 included the building and testing of three new types of yard cleaning and dirt disposing equipment, the testing of new types of crosstie renewal machines, the development of a multiple-gun pneumatic tamper, and considerably increased interest in large-scale snow-fighting equipment of various types. Continued, too, was the trend to mechanize bridge and building operations, and the increasing trend of recent years toward motorizing section, extra gang and bridge and building forces for the transportation of men, tools and materials. More than 735 trucks were purchased for such purposes during the year, many equipped with special hoists and attachments for doing various classes of work.

To Enlarge Equipment Lists

Possibly the most important single factor bearing on the work equipment situation on the railroads in the years immediately ahead will be the shorter work week and its effect on present methods of performing roadway and structures work. To a questionnaire sent out by a committee of the American Railway Engineering Association asking the roads their plans regarding mechanization under the 40-hr. week, more than 70 per cent of those replying said they are contemplating expanding their present list of equipment by the purchase of both present types of machines and entirely new types.

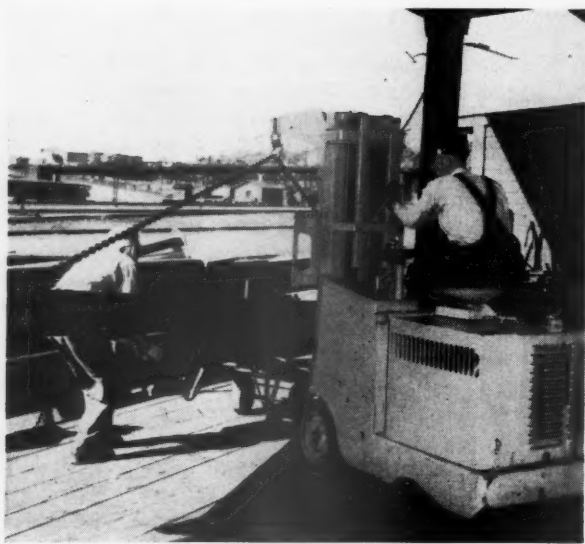
Other information furnished indicated that many roads are planning, or have already made, major adjustments in their work organizations, turning to fully mechanized extra and specialized gangs for all major items of out-of-face work, and reducing the responsibilities of the section forces to the minimum. On the other hand, other roads are maintaining or enlarging their section forces and section territories, and plan to mechanize these forces to the fullest extent practicable.

It is evident that, to a greater extent than ever before, the roads are planning increased mechanization of their roadway and structures operations, wherever possible, and will be receptive to both large-production machines for their heavy seasonal program work, and the smaller, readily portable power tools and machines for day-to-day spot repairs and renewals. In their plans they will have an increasingly large number of machines to choose from in 1950—including the many machines that have long demonstrated their adaptability, reliability and economy in maintenance work; machines that made their debut only during the past year in pilot models; and many others that are undergoing major improvements or are still in the development stage.

UNIT LOAD Handling to Increase in '50

*Containers and fork trucks used increasingly in l.c.l. movements
—Stores departments receiving more materials in unit loads*

By J. W. MILLIKEN
Associate Editor — Purchases & Stores



Above left—One of the reasons for the popularity of the fork truck is its versatility. Here it has been fitted with a boom so it can be used as a light crane. Above right—Containers such as these used by the Southern Pacific are better than the pallet for handling packages of assorted sizes, an advantage for movements to on-line points

A fork truck stacking empty pallets at the Santa Fe's Kansas City, Mo., freighthouse. Most pallets in use on the railroads are for movement within the freighthouse only, handling freight from truck tailgate to car and vice versa



Mechanical handling of freight—revenue movements and company material—is nothing new to the American railroads, but 1949 saw great expansion of the practice, and prospects for continued advancement in 1950 are particularly bright. Larger quantities of materials are beginning to come to the railroads' storehouses in unit loads for greater ease in handling by mechanical means. Some shipments are being received on pallets, and from suppliers located off the line of the receiving road. Some stations department heads also report some slight increase in the amount of commercial freight being offered on pallets to the railroads for shipment. More railroads, too, report the use of palletized containers of one type or another to handle l.c.l. freight. With this trend the fork truck, in all its varieties, is assuming an ever larger place in railroad purchases of mechanical handling equipment.

Unit-load handling, including shipping and receiving as well as intra-station or storehouse movements, is saving money for the railroads, whether those loads are handled by fork or platform lift trucks or by hoists or cranes. To date, the stores departments of the railroads indicate that they have succeeded in persuading the manufacturers of about 30 commodities they purchase to ship by this method, and they are continuously urging expansion of this technique. The current list of materials being received in unit loads includes journal bearings, which for many years have been shipped in skid boxes, brake beams strapped in unit loads for loading or unloading either by a fork truck or crane, and such material as fire brick, paint, rivets and welding rod. Several lines also report that they are shipping more unit loads from main storehouses to outlying stores, with an increasing number of palletized containers in use for shipping small quantities of several commodities simultaneously.

Containers Preferred

In the meantime, the stations departments more and more are using containers which can be handled by lift trucks, and pallets, too, to facilitate shipping operations. In the past year several additional railroads have begun using these devices. (If present plans materialize, more than 500 more containers will be placed in service this year, supplementing those already in use.) Containers have been found useful by one road, for example, for shipping electric storage batteries, while another Western line ships bakery products in "Cargotainers," and still a third has applied palletized containers to the shipments of a general run of merchandise freight. While some roads report that the palletized container is not saving them money in handling costs, it is nevertheless greatly decreasing the amount of loss and damage to l.c.l.

A few railroads have found the ordinary pallet, too, an aid in shipping some l.c.l. freight between stations and transfers on the home road. The pallets have not proved as useful, generally speaking, as the container, as is evident in any important l.c.l. operation. The many sizes and shapes of packages and shipments are very difficult to palletize successfully. Freight must be picked over carefully so that only pieces of the same general size and shape — consigned to the same destination station or transfer — are handled together.

This operation can lead to congestion on the receiving dock, or to a last minute rush to load cars, with a chance that some shipments may be delayed. The container is in many ways more flexible, and for this reason has been more widely utilized as a shipping aid than the pallet. However, one railroad has reported that at one of its transfers it is consolidating l.c.l. shipments which it palletizes for further movement to a Navy Department depot on its line, as well as l.c.l. supplies for its own stores department.

The 40-Hour Week

In 1949 the stations departments of the railroads had to adjust to the 40-hr. week, beginning September 1. It was found that in order to continue to give service to patrons many transfers would have to be kept open on Saturdays. Also, the jam of freight reaching stations on Friday afternoons has meant many hours of overtime, particularly at some of the larger stations. This development of course has tended to make operating costs go up. To offset the added expense many railroads are considering more extensive and intensive use of mechanical handling equipment in 1950. Already 17 railroads have indicated that in 1950 they will probably install in their stations 121 fork trucks, 243 burden carriers, 25 tractors, an even dozen hand hydraulic lift trucks, 2 power conveyor systems and 300-odd units of miscellaneous equipment including skid jacks and platforms, gravity conveyors, crane trucks and trailers.

The stores departments of the various railroads of course went to the 40-hr. work week at the same time as the stations departments. When the coal and steel strikes brought on a curtailment of shop work, many employees were furloughed in this department, with the result that most storekeepers are not yet able to tell what the real effect of the wage increases will be on handling costs in these departments. Most reports indicate that there has been no appreciable increase in material stores expense to date, but that this is a result of the low employment rate since September 1. There is a general belief that with the renewed activity in railroad shops which is expected to follow the settlement of the major industrial strikes, improved materials handling offers one of the real hopes for keeping down stores expense.

Reports from the railroads are practically unanimous that mechanical handling is going to increase as the railroads continue efforts to cut costs of operation. Particularly noticeable is the extent to which the stations departments of the railroads have adapted machines to the handling of freight. For many years this department was accused of being behind the stores department in securing low-cost materials handling. On most railroads this condition no longer can be said to exist. It used to be that most fork trucks, for example, bought by the railroads were used in the stores departments. For 1949, comparative returns from the two departments of ten railroads show that 78.4 per cent of the fork trucks placed in service by them went to stations and transfer platforms. Thus, 47 of 60 new fork trucks purchased by the ten railroads are being used to handle revenue freight, while the other 13 went to storehouses. Such evidence that the transportation department is "catching up" gives promise of better handling of customers' shipments and greater economy.

Outlay for MAINTENANCE Down Slightly

Dollar value of expenditures held up well in 1949 but volume of rail and tie renewals was moderately to substantially lower — Prospects better for 1950

By the majority of railway officers responsible for the upkeep of the tracks and structures, the passing of the year 1949 will not be greatly lamented. As the consequence of a number of unfavorable circumstances, including the downward trend of traffic caused principally by strikes in the coal and steel industries, these officers generally were not able to maintain the activity of the forces under their jurisdiction at satisfactory levels. This conclusion is based on the fact that declines occurred in several of the major indices of maintenance activity. A further conclusion—one that is substantiated by figures compiled by the Interstate Commerce Commission—is that there was a corresponding increase in the amount of deferred maintenance in the tracks and structures. In view of the large amount of deferred maintenance now prevailing, and other factors, indications are that maintenance activity will seek higher levels in 1950.

By **MERWIN H. DICK**
Engineering Editor

Expenses Not Good Index of Activity

Primarily because the hourly wages of maintenance workers showed material increases during the year, especially after September 1 when the 40-hr. week became effective, the dollar value of the total expenditures for the maintenance of way and structures during 1949 is not an altogether reliable index of the actual amount of work done as compared with former years. In fact, in the face of a moderate decrease in the tonnage of new rail laid and a relatively larger decrease in the number of ties installed, the dollar value of total maintenance expenditures was maintained at very nearly the level of the previous year. Based on actual figures for the first nine months of 1949, it is estimated that

the Class I railroads spent \$1,300 million on the maintenance of the tracks and structures during the year. This was only \$48 million, or 3.6 per cent, less than was spent for this purpose in 1948. It was, moreover, higher than for any previous year except 1945.

In 1949 maintenance expenditures on a monthly basis were either above or only slightly below those of 1948 for the first eight months, but they showed a decline of 14.5 per cent in September, the first month in which the five-day week was in effect. This decline in expenditures in the face of the imposition of the 40-hr. week could be construed as evidence that the roads, for the time being at least, had developed an "over-compensation" in efforts to control maintenance expenses.

Being confronted as they were during the year with higher unit costs and a generally lower level of traffic, it is not surprising that the railroads had difficulty keeping the maintenance ratio (maintenance expenses expressed as a percentage of operating revenues) under control. For the first nine months this ratio was 15.3 for the Class I roads as a whole. This figure compares with a ratio of 14.0 for 1948, and is only slightly below the wartime peak of 15.8 reached in 1945. In fact, with the exception of the latter year, the maintenance ratio for the first nine months of 1949 was higher than it has been for at least 25 years.

The rail situation in 1949 presented a study in shifting conditions. During the first eight months of the year,

Expenditures for Maintenance of Way and Structures, Class I Railways

	Average 1925-1929 (Inclusive)	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948
Superintendence.....	\$ 57,262	\$ 39,072	\$ 40,231	\$ 43,407	\$ 49,461	\$ 57,592	\$63,790	\$ 65,590	\$ 72,538	\$ 75,353	\$ 82,843
Roadway Maintenance..	83,698	36,112	38,372	47,923	69,701	110,764	121,072	118,453	93,495	99,137	111,885
Tunnels.....	2,608	1,210	1,374	1,780	4,529	3,668	4,222	3,734	2,919	2,817	2,818
Bridges, Culverts, etc...	43,471	24,782	26,514	31,754	40,801	44,356	51,227	48,540	43,272	42,499	47,935
Ties.....	114,859	59,910	58,353	64,928	75,141	84,982	100,446	96,314	89,620	96,454	101,905
Rails.....	47,402	22,065	22,736	24,684	25,199	33,146	39,544	42,831	38,868	34,377	30,858
Other Track Material...	48,354	29,670	33,428	38,711	40,091	50,541	57,220	60,955	52,887	57,418	63,870
Ballast.....	19,379	10,343	11,592	15,093	20,107	25,168	28,493	31,787	24,121	28,406	31,181
Track Laying & Surfacing	211,067	114,932	117,839	156,142	212,594	289,636	366,999	356,823	326,252	337,406	375,556
Fences and Snow Sheds...	18,946	+3,235	+3,408	+3,930	+4,031	+5,877	+8,121	+6,310	+6,513	+6,689	+8,097
Buildings.....	79,000	41,018	46,852	60,412	80,663	102,680	114,513	117,714	96,047	98,892	115,376
Water Supply.....	10,444	5,207	6,020	6,736	8,561	9,680	11,473	11,129	9,521	10,005	10,675
Tools and Equipment...	18,230	13,720	15,434	18,971	20,892	23,397	28,664	31,244	30,318	35,341	41,684
Injuries.....	5,907	2,929	3,220	3,547	4,642	5,903	6,856	7,453	7,050	7,878	9,464
Removing Snow, Ice and Sand.....	9,947	6,110	9,030	5,995	8,739	12,798	14,882	27,729	11,828	22,838	30,598
Miscellaneous.....	78,449	56,516	29,202	79,076	131,206	248,093	245,770	384,700	244,991	256,586	283,255
	\$849,021	\$466,831	\$497,031	\$603,088	\$796,358	\$1,108,281	\$1,263,092	\$1,411,306	\$1,150,241	\$1,212,096	\$1,348,000

Note: Miscellaneous includes such items as signals and interlocking, depreciation, deferred maintenance, amortization and unclassified charges.
+Includes signs, as well as fences and snow sheds.

and continuing a situation that had prevailed since early in the war, the steel producers as a whole were not able to accept commitments for the full quantities of new rail desired by the railroads. Beginning about August 1, however, some cut-backs and cancellations of orders occurred, with the result that, at least until the start of the strike of steel workers, the steel companies as a whole did not have enough orders for new rail on their books to keep the mills busy.

The net result of the cut-backs was a decline in the tonnage of new rail laid in 1949 as compared with the previous year. One of the charts shows the trend of rail renewals on the Class I roads since 1920, and includes figures giving the net tons of new rail laid in each year from 1941 to 1949, inclusive. The amount shown for the latter year (1,422,000 net tons) is an estimate based on figures supplied to *Railway Age* by practically all the Class I roads. It represents a decline of 108,031 net tons, or 7.1 per cent, compared with 1948.

Slump for Tie Renewals

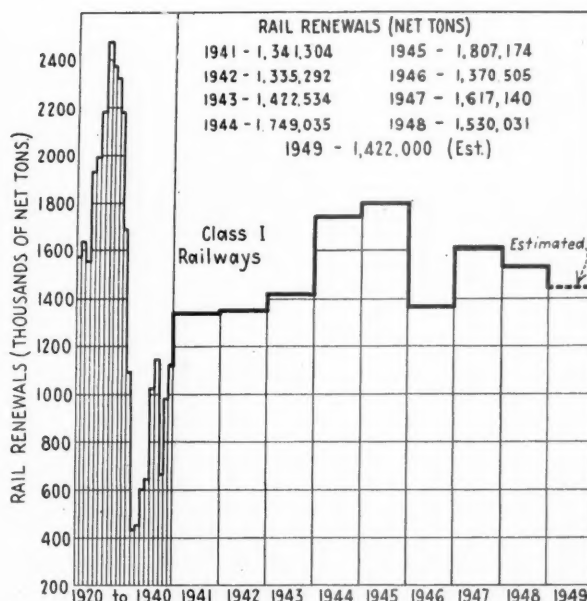
Tie renewals fared relatively much worse in 1949 than did rail renewals. Another chart shows the trend of tie renewals since 1920, and includes actual figures giving the number of ties inserted for replacement purposes for the years 1941 to 1949, inclusive. Again, the figure for 1949 is an estimate based on figures submitted by practically all the Class I roads. The renewals given for last year (30,000,000 ties) were 6,842,371 ties, or 18.5 per cent, below 1948. This represented the continuance, at an accelerated pace, of a downtrend that has been in evidence since the end of the war. Thus, tie renewals, for the second consecutive year, were brought to the lowest level in history.

The decrease in aggregate tie renewals last year is the result of a combination of circumstances. On some roads which inserted fewer ties in 1949 the explanation is simply that, when maintenance allotments were reduced because of the decline in business, with labor costs being what they are, the cutting back of programmed tie renewals proved an easy way to deal with the situation. Other roads report that, because of the relatively heavy tie renewals of the war years, their tie condition is comparatively good.

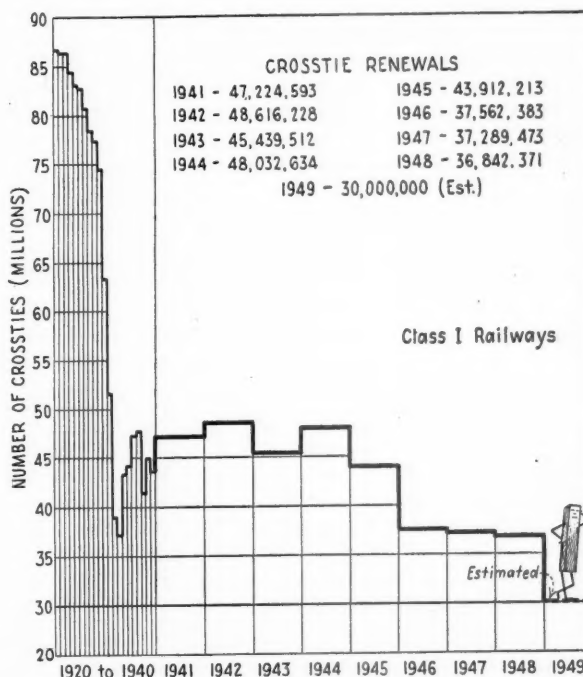
Deferred Maintenance Up

To the extent that the reduced level of maintenance activity in 1949 was the result of retrenchment there has been an increase in the already considerable amount of deferred maintenance on the fixed properties. In fact, the Engineering Section of the Interstate Commerce Commission's Bureau of Valuation estimates that the amount of accumulated deferred maintenance on the Class I railroads increased \$315 million during 1949, to a total of \$875 million. This increase was attributed in part to the greatly increased unit prices at which the existing deferred maintenance must be liquidated, and in part to the curtailment of necessary maintenance work that occurred in 1949. It was estimated, for instance, that the tie renewals for the year fell 17,000,000 ties short of actual needs, and that the normal computed requirements for new rail for the year amounted to 1,830,000 net tons, instead of the 1,422,000 tons actually laid.

Looking ahead to the situation that will prevail in 1950, one thing is certain—it will be an interesting year.



The inability of the mills to meet the demand for new rail in the first half of the year, followed by cut-backs and cancellation by the railroads in the second half, caused a moderate decrease in the amount of new rail laid in 1949 by Class I roads



A sharp drop in the tie renewals of the Class I roads in 1949 brought them to the lowest level on record

The pressure for keeping maintenance expenses under control, now all the greater because of the 40-hr. week, will continue to force the maintenance forces to do everything possible to save man-hours, and this means more mechanization and greater attention to the problem of putting more permanence into the track and structures. At the same time the needs of the properties are almost certain to demand a higher level of maintenance activity than prevailed in 1949—with the extent of the upturn depending in large part on the trend of business.

Developments in MOTIVE POWER

Two new forms of train propulsion road tested—Refinements of existing locomotive types, of their maintenance and of the fuels they burn improve operation and reduce costs

By G. J. WEIHOFEN
Associate Editor

Among the most significant developments in motive power over the past year have been: (a) the continued growth in the use of Diesel power, which increased by more than one-third last year to a total of over 13 million horsepower; (b) the appearance of a self-propelled, hydraulic-transmission, Diesel rail motor car which can be operated either singly or in multiple-unit with one operator; (c) the operation in revenue service of an oil-burning gas-turbine locomotive, and the test-plant operation of a locomotive-size coal-burning gas turbine; (d) an easing in the supply of Diesel fuel, a slight change in the price relationship between coal and distillate oil in favor of the latter, and a drastic change in the cost relationship between residual fuel oil and both of the other fuels; (e) an increase in the number of roads using sized and washed coal because of improved operation and reduction in the overall coal bill; and (f) the emergence of proof that modernization of existing steam locomotives and maintenance facilities can be repaid out of savings in less than three years.

The proportionate increase in Diesel power has been greatest in the latest field to be invaded—commuter service. A year ago there were virtually no Diesel locomotives in suburban service; today two Chicago railroads are Dieselizing their commuter service by over 50 per cent, and three roads in the New York area are converting part or all of their commuter service to Diesel power.

A New Diesel Application

One major advantage of the Diesel in suburban service is the possible elimination of small outlying terminals which were necessary to maintain the steam power at the ends of outbound evening runs. This advantage is not all gain, however, as cold weather introduces problems yet unsolved where the Diesel locomotive has to be left unattended for any appreciable time, as would occur on an all-night layover where the locomotive cannot be utilized for switching or local freight service.

Another operating advantage of Diesel power in commuter passenger service or either freight or passenger branch-line service is the elimination of turning requirements where double-cab or switcher-type units are employed. While turning has also been eliminated on steam power by some roads by adding a second pilot, or "cowcatcher," to the tender, this has not met with much favor because of objections to running steam power backward.

A new application of the Diesel engine appeared during the past year in what may be considered a cross between a car and a locomotive. Built by the Budd Company and powered by two 275-hp. General Motors Diesel engines, the unit is known as a rail Diesel car and is completely self-powered; it can be operated multiple-unit the same as conventional electric interurban or suburban trains. The engines are mounted under the floor of the car to avoid intruding on revenue space. The car weighs 112,800 lb. ready to run, about half of which is on the driving wheels, and it seats 90 passengers. It is 85 ft. long, has controls at both ends, and is air conditioned. A hydraulic transmission is employed to bring the car up to engine speed at which point the transmission automatically locks into direct drive.

Multiple-unit trains are the most flexible of all types because as many or as few cars as are desired can be operated together with little or no effect on acceleration characteristics, depending upon whether trailer and power cars are mixed or only power cars are used. Multiple-unit flexibility has contributed to the maintenance of frequent train service during mid-day hours which, in turn, has contributed to what is considered a profitable suburban service on at least one railroad.

Fuel Economics

The fuel situation has not changed appreciably with respect to coal and Diesel oil, except that the supply of the latter has improved materially and its price has

dropped a little over one-tenth during the past year. The price relationship between these two fuels over the past ten years is shown in the table. The principal change that has occurred has been in residual fuel oil of the type used in oil-burning steam locomotives. This fuel seems rapidly to be becoming a glut on the market. Its price has dropped to as little as one quarter what it cost a year or so ago, and it can now be purchased for less than two cents per gallon. A number of roads have made large-scale conversions from coal to oil for steam power, and it would not be surprising to find more converting to oil during the coming year.

Heavy fuel oil appears to be in the most reliable supply of the three principal types of locomotive fuel within the foreseeable future. Diesel oil should be plentiful so long as the country does not get into war, which could multiply the need for light distillate oils several times within a few weeks. Heavy fuel oil, however, should continue plentiful even in war because as the demand for distillates rises and is met, the output of residual increases automatically, several gallons of residual being produced for every gallon of distillate extracted from crude. As to coal, reserves are nearly boundless, but the regularity of production is questionable.

Last year saw the placing of the first gas-turbine locomotive in revenue service on an American railroad. The Union Pacific has had in operation for the past six months a single-unit gas-turbine locomotive built by American Locomotive-General Electric and developing 4,500 hp. The locomotive burns Bunker C oil, and carries 6,600 gal.—enough for 12 hours of operation at rated output.

Progress on the coal-burning gas turbine has likewise continued. Early in December a 38-hour test run was made on a locomotive-size gas turbine fired with bituminous coal. The turbine was inspected at the completion of the run, and all components found in good condition.

Future of Present Motive Power

The great majority of railroad motive power needs for the immediate future will be met with the two principal types in use today—Diesel and steam—with the former continuing to gain at the expense of the latter. Because of this trend to Diesel power, it has become a widespread policy to overlook the savings

that can be made with the remaining steam power through better maintenance practices, improvements to existing steam locomotives, and modernization of shops.

To an impartial observer, this policy is puzzling in view of the fact that there are still nearly 30,000 steam locomotives in service making some 500 million miles a year. Even if the most pessimistic outlook possible is assumed for steam power with the present replacement ratios of Diesel for steam continued, and the present volume of purchases maintained, it would take over a dozen years for the last steam locomotive to be retired. In the meantime, millions of dollars can be wasted annually by neglect of steam power and by obsolete shop machinery and servicing facilities.

This dozen years is a rock-bottom figure. Complete replacement is not likely ever to occur, and if it should, the time required would probably be nearer twice this long, as the replacement ratio is continuing to drop. Before the war, the average Diesel unit replaced about two steam locomotives. For the year ended April 1, 1948, the ratio dropped to 1.44, and for the past year was barely over unity. In all probability this ratio will continue to drop, probably below unity, because (1) less advantage can be taken of the high availability inherent in Diesel power as the Diesel fleet grows and is assigned to less and less selective runs, and (2) later models of steam locomotives will be replaced as Dieselizeation progresses, and this more recently built steam power has greater hauling capacity as well as greater potential availability, both of which factors will tend to require more Diesel units to replace a given number of steam locomotives. It seems quite likely, therefore, that the ratio between steam locomotives retired and Diesel units put into service will continue to drop, and hence that the theoretical time required to replace all steam power by Diesels will be appreciably more than the dozen years at present replacement ratios.

Steam-locomotive modernization programs can be shown to pay for themselves in far less time than the steam locomotive will remain even if only a 12-yr. survival were assumed. The North Western found that the cost of modernizing a group of 20-yr.-old 4-8-4's was repaid in less than three years through savings in maintenance cost alone; and above this there was a saving of 20 per cent in fuel consumption. The locomotives now have an availability over 89 per cent, a maintenance cost below 20 cents per mile, and go 400,000 miles between classified repairs.

The Louisville & Nashville has likewise found it advantageous to pay close attention to steam power, as well as to the coal it burns. The cumulative maintenance cost, including classified repairs, for a group of 2-8-4's over a period of 6 1/3 years was 12.12 cents per mile. These locomotives also have a high availability, requiring an average of about 1 1/2 hr. for mechanical servicing at the end of heavy 9,500-ton coal-train runs up to 276 miles in length. The L. & N. has likewise made a big saving in the operation of all its steam power by going exclusively to sized and washed coal, which the road figures saves over a million dollars a year in the fuel bill alone. The use of this screened coal has furthermore led to a number of operating advantages, such as the elimination of stopped-up flues and the slagging up of flue sheets, the reduction of fire clinkering, and an increase in boiler evaporation of 15 per cent by actual test.

The Cost of Coal and of Diesel Oil at Various Points During the Past Ten Years:^a

Coal (Dollars per ton):		Percentage Increase
1939	2.37	—
1947	4.13	74
1948	5.14	117
1949	5.14	117
Diesel Oil (Dollars per gallon):		
1939	0.04395	
1947	0.07435	69
1948	0.1051	139
1949	0.09	104
Ratios (Ratio of dollars per ton to dollars per gal.):		
1939	53.9	
1947	55.7	
1948	48.8	
1949	57.2	

^a Figures are taken from a committee report of the Railway Fuel and Traveling Engineers Association.



Many of these cars should be retired and replaced in 1950

FREIGHT CARS Limited Earnings in 1949

Too few new cars and too many old cars reduced potential service and greatly increased railroad costs—Estimates of new car orders in 1950 exceed 70,000

By E. L. WOODWARD
Western Mechanical Editor

As a result of governmental policies which make it impossible to build up surplus earnings in good years to take care of lean years, railroads in this country were unable to maintain equipment standards at desired levels during 1949, particularly with freight cars. The number of new cars installed was about 10 per cent less than in the preceding year; retirements were cut 24 per cent; cars undergoing or awaiting repairs increased to 7.3 per cent of the total number on line; and all cars advanced in age, almost 35 per cent of them passing the quarter century mark.

With such venerable equipment, the impracticability of giving shippers the service they need and should have is obvious. Railway revenues are proportionately reduced and operating and maintenance expenses boosted, with a most undesirable effect on net earnings. Obsolete, worn-out freight cars are just as much of a liability on the road and item of expense in the repair shop as private automobiles in similar condition; many people have an intimate personal knowledge of what this means in the case of automotive equipment. Experience in 1949 showed that perhaps the greatest single railroad need is for traffic and earnings (take-home pay) which will permit them to repair and rebuild freight cars in times of light traffic, retire old cars, and purchase new ones in accordance with a broad-gage program looking to their needs over a period of years.

More new freight cars were installed in 1949 than in the years immediately after the war, but fewer than in 1948, when the total installed on Class I roads, including railroad-owned private-controlled refrigerator cars, was 102,737. In the first 10 months of 1949, only 77,618 new cars were installed, or an average of 7,761 cars a month, as compared with practically 8,500 cars a month in 1948. The new cars were supplemented by 7,890 rebuilt cars placed in service during the first 10 months of 1949, or about one-half the monthly average in 1948.

The picture of freight-car supply is directly affected by retirements, which also were fewer than in 1948 when 100,847 cars were retired, or an average of 8,400 cars a month. In the first 10 months of 1949, 76,852 cars were retired, or an average of 7,685 cars a month, a rate too

low to effect any marked reduction in the average age of railway freight equipment.

Freight cars on order at all shops during 1949 decreased regularly each month from 86,670 cars in January to 17,419 cars in October, the average throughout the year being only 47,727. This reflected the delivery of new cars during the year and the marked reduction in new cars ordered, owing primarily to traffic and financial developments. The rate of decrease in orders was slightly higher for private cars (24.6 per cent) than for railroad cars (19.8 per cent).

The steady decline in general serviceability of freight cars was indicated by the increased amount of equipment in bad order. Railroad and private cars undergoing or awaiting repairs increased rapidly in number and percentage every month in 1949, comprising 4.5 per cent of the total cars on line in January and 7.3 per cent in November.

Car Surplus and Shortage

Under a given set of equipment conditions, the ability of railroads to meet shippers' requirements is largely dependent upon the volume of traffic offered and, measured in weekly revenue carloads, this was about 16 per cent less in 1949 than in 1948. The peak weekly loading in 1949 was 808,156 for June 11 which dropped to slightly under 600,000 carloads for the five-week period of October 2 to November 5, inclusive.

Freight-car supply was "spotty" during the year, the surplus increasing from 29,649 cars on January 6 to a maximum of 207,627 on November 5, then dropping to 38,628 on November 19. These surpluses were mostly in hopper cars (excluding covered hoppers) and were caused by the coal strike. The steel strike also reduced the demand for gondola, flat and other cars normally required for steel shipments. The box car surplus reached a maximum of 38,933 cars on June 4 and dropped to the extreme low of 1,994 cars on October 29.

Shortages in the meantime increased quite regularly through the year from 465 cars on January 6 to 12,452 (mostly box) on October 8. By November 19, the total shortage dropped to 5,269, about one-half of which were box cars. The excess of surplus over shortage exceeded 150,000 cars on March 26, also from October 1 through November 5 when it reached the maximum of the year, 200,183 cars, again due to strike conditions. By November 26, this figure had dropped to 6,588 cars. It is significant that in no case during 1949 did the car shortages exceed surpluses, whereas this condition occurred during 32 weeks in 1948, 46 weeks in 1947 and 26 weeks in 1946.

Another major factor in the supply of freight cars, namely, turn-around time, was reported by the Car Service Division of the Association of American Railroads to be worse in October, 1949, than in any recent year, being 19.87 days as compared with 12.94 days in 1948, 12.31 days in 1947 and 12.88 days in 1946. Box car turn-around in October (13.94 days) was the best of the year, but the average was adversely effected by abnormally high turn-around time for gondola and hopper cars, (23.63 days and 36.89 days) idled by the coal and steel strikes.

A contributing cause for the reduced efficiency in use of cars of all types was the five-day week, effective September 1, which necessitated granting Saturdays as free days for demurrage purposes and thus tending to increase delays in unloading.

Dependent upon traffic levels and the pressure for more adequate freight-car equipment, railroads will undoubtedly step up their repair programs in 1950, critically examine and improve all factors of car utilization, increase retirements, order and install additional new cars. In fact, several substantial orders of new freight cars for delivery in 1950 have already been placed. This bears out the prediction of W. T. Faricy, president of the A. A. R., late in 1949, that individual railroads will soon begin placing orders for freight cars, not because business is good, but because the cars are wearing out.

He also pointed out that more freight cars are required to handle a given volume of traffic under the new five-day railroad week and cars are generally being loaded less heavily than during war years, both conditions reducing the efficiency of car use and hence necessitating the provision of additional equipment. In view of the many uncertainties, any forecast of freight-car orders in 1950 is obviously little more than a wild guess, but estimates of at least 70,000 new cars ordered in 1950 have been seriously made and seem fairly realistic. Unless the number of cars actually installed exceeds the 1948 figure of 100,000, however, little real progress will be made in meeting and correcting the conditions mentioned by Mr. Faricy.

Other Car Problems

The supply of an adequate number of freight cars to meet traffic demands is not the only problem confronting railway car departments in 1950. A recent survey of opinion showed the need for still further intensive efforts to strengthen car floors, to eliminate wood running boards as soon as possible and to install the latest improved pipe anchorage devices more rapidly. Brake-beam tension rods with threaded ends are also listed as objectionable.

The perennial problem of better lubrication materials and practices to minimize hot boxes was repeatedly stressed, also the need for modern trucks and more effectively maintained cars in all details to operate satisfactorily at ever-increasing train speeds.

The excessive cost of upgrading cars for higher-class commodity loading was listed as a major deterrent to making badly needed improvements in car condition. An appeal was registered for improved packaging of lading to reduce damage, more prompt return of freight cars to home lines and the replacement of old equipment with modern cars built of low-alloy high tensile steel or other lightweight materials.

In answer to the specific question if an upward-graduated per diem rate would encourage the application of lightweight cars, roller bearings, load-compensating brakes, improved trucks, etc., railway car officers showed a most decided difference of opinion and split almost 50-50 between "Yes" and "No." Some who answered in the negative said this would place an unfair burden on short-line terminating carriers which will benefit little, if at all, from the improvements. Others gave the idea full approval. Still others qualified their answers by saying that a graduated per diem on the basis of modernized cars would be impracticable, but might prove useful if based on car classification for higher commodity loading.

Judging from this limited survey, it seems apparent that considerable misinformation and misapprehension exists regarding the merits of graduated per diem rates based on mechanical conditions which should be cleared up to make sure railroads are not missing an opportunity to stimulate more rapid application of recognized freight-car improvements.

FREIGHT CARS INSTALLED AND RETIRED*

	New cars installed	Rebuilt cars installed	Total cars installed	Total cars retired
1949 (10 mo.)	77,618	7,890	85,508	76,852
1948	102,737	18,395	121,132	100,847
1947	63,312	2,846	76,158	83,749
1946	40,377	8,966	59,343	80,067
1945	38,987	10,849	49,836	58,708

* Including railroad-owned private-controlled refrigerator cars.

NEW FREIGHT CARS ON ORDER*

	Railroad	Private	Total
1949			
January	81,683	4,987	86,670
February	73,384	4,677	78,061
March	63,410	4,095	67,505
April	53,975	3,454	58,429
May	45,057	2,812	47,869
June	36,331	2,279	38,610
July	31,746	1,912	33,658
August	26,599	1,082	27,681
September	20,609	761	21,370
October	16,183	1,236	17,419

* All shops

BAD-ORDER FREIGHT CARS*

	Total cars on line	Total under-going or awaiting repairs	Per cent to total on line
1949			
January	1,804,562	81,379	4.5
February	1,796,798	89,759	5.0
March	1,799,722	92,580	5.1
April	1,916,790	94,876	4.9
May	1,922,273	98,640	5.1
June	1,910,244	109,640	5.7
July	1,910,010	114,304	6.0
August	1,911,995	126,691	6.6
September	1,931,416	126,576	6.6
October	1,903,839	124,707	6.6
November	1,820,037	132,822	7.3

* Including private.

Carriage of Persons—Business or Philanthropy?

Traffic remains at higher level than prewar, but costs are "out of sight"—Equipment is "tops"—Head-end losses get spotlight

By WILLIAM H. SCHMIDT, JR.
Transportation Editor

The rosy-hued hopes and plans abroad in the railroad industry at the close of the war, when passenger traffic and earnings were abnormally distended, got a dousing of cold reality in 1949, when the "break-even" point in train operation soared higher, traffic and revenues continued to fall, higher fares than were dreamed of at the war's end had to be established, and the railroads' relative status in the movement of intercity passengers was pushed down to 1939 levels.

The Interstate Commerce Commission estimate of the proportion of total intercity passengers carried by common carriers and automobiles together gives the railroads 11.6 per cent in 1948, compared with 13.3 per cent in 1947. Buses also lost to the private car, but in much lesser degree, their proportion declining from 6.8 per cent in 1947 to 6.6 in 1948. The air lines' share, on the other hand, was 1.7 per cent in 1947 and 1.6 per cent in 1948. On some railroads these pressures have produced a reaction bordering on hysteria—a rush to cut service to the bone and to scrap popular innovations effected since the war.

Unrealistic, "blue-sky" thinking—on more than one road—in 1945 was bound to produce confusion in 1949. With government favors enjoyed by competitors bigger and better than before the war, and the disability of the railroads vastly increased by the higher cost of maintaining terminals and roadways, there was no reason to believe that the railroads could continue to hold the competitive relationship they enjoyed during and immediately after the war.

How Many Customers?

It is easier to possess hindsight than foresight; the railroad industry was, on the whole, benefited in plant and public esteem by the promotional activities of the "era of high hopes." But the many roads which actually carried out improvements in plant, equipment and service, designed to hold a maximum of passenger patronage within a logical framework of costs, and based on careful estimates of traffic potential, are the very ones which now refuse to rush for the "exit" door. From all parts of the country there come declarations that good (not gaudy) passenger service between centers of population is worth promoting and probably will continue to contribute to railroad net income; still more new streamliners are in production; the revolution in motive power proceeds apace; the air is full of plans for bold experiments in fares.

A group of railroad passenger traffic officers, repre-

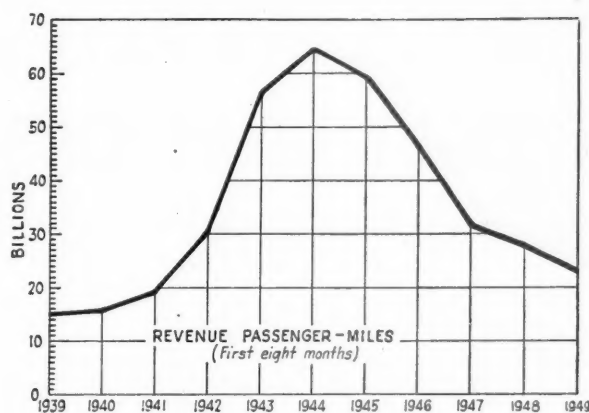
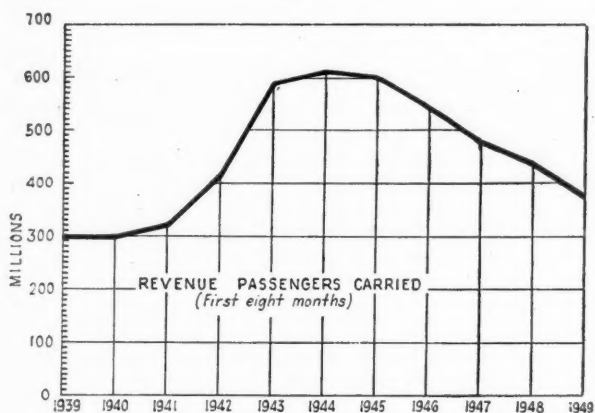
senting all parts of the country, late in 1945 made an estimate of passenger traffic for the ensuing decade, which has proved to be amazingly accurate thus far. They predicted that railroad traffic would decline to a point below that which less realistic observers foresaw, but that it would establish itself well above prewar levels, chiefly because increased population, money, business activity, and migration of industry would boost total travel, by all modes of carrier, to a higher plane.

This is just what has happened. The accompanying graphs of trends in passenger traffic since 1939 give clear evidence that passenger business is by no means at depression levels. Revenue passenger-miles in the first half of the year were 68 per cent higher than in the same half of 1939—a normal "prewar year." They were 150 per cent higher than in 1933—benchmark of the era of streamliners and revolutionary step-ups in speed. They were 17 per cent better than in 1929. Fare increases have produced an even more favorable relative revenue position. Passenger revenues in the first half of 1949 were 117 per cent higher than in 1939; 187 per cent higher than in 1933; and just slightly under 1929, when the basic fare was 3.6 cents a mile for coach travel, plus a surcharge for Pullman.

In their intensive analysis of costs, to see how they can cut down the all-time record passenger-service deficit, the railroads have focused particular attention on the fact that mail and express have become relatively greater "loss leaders" than passengers; two-thirds of the "passenger deficit" in 1948 was attributable to this "head-end" business—which is not the "carriage of persons" at all. To plug this drain the railroads are looking toward fairer compensation from the government for transporting the mail—the parcel post portion of which, with new weight and size limits, plus higher express charges, is taking on more the appearance of an l.c.l. freight operation than mail service.

The Fare Situation

The major fare development of the year was the establishment of a 12½ per cent increase in basic first class and coach fares on the eastern lines, effective December 1—the third general increase in that region since the end of the war. One-way coach fares on those lines were thereby boosted to a level 69 per cent above that of 1941, compared with current coach fares in the West and Southeast 25 per cent and 67 per cent higher than in 1941, respectively, (fares per mile in the Southeast in 1941 were only 1.5 cents, compared with



two cents in the East and West). Similarly, the first-class, one-way rate in the East is now 50 per cent higher than in 1941, compared with increases of 17 per cent in both the West and Southeast.

Differences in population density, lengths of journey, terminal costs and competition undoubtedly account in part for the varying actions taken in the separate regions. It is significant that in the first eight months of 1949 revenues in the Southeast and West declined more than in the higher-fare East:

Passenger Revenues 1949 compared to 1948 (percentage, first 8 mo.)		
	Coaches	First Class
U. S.	-8.9	-7.9
East	-8.8	-3.7
Southeast	-9.6	-5.4
West	-9.1	-12.8

Traffic, on the other hand, declined more in the East than in the other two regions:

Passenger-Miles (percentage, first 8 mo.)		
	Coaches	First Class
U. S.	-15.7	-13.2
East	-19.4	-14.8
Southeast	-15.6	-10.3
West	-9.9	-12.6

These results (which, of course, were before the latest fare boost in the East) make it appear, up to now, that the eastern roads figured right in adopting higher fares for their territory than were effective elsewhere in the country. It is noteworthy, however, that, in August, coach revenues declined, from August, 1948, less in the West and Southeast than in the East—10.6 and 16.7 per cent, respectively, compared with 18.5 per cent in the East. In sleeping and parlor cars, on the other hand, there was a revenue decline of 18.4 per cent in the West and 19.3 in the Southeast, compared with 15.1 per cent in the East.

Their competitors have increased their fares since the war less than the railroads. Indeed, air fares are lower than they were in 1939. Subsidy, compounded by inflation, undoubtedly accounts for much of this disparity. But whatever the equities involved, the railroads' competitors unquestionably impose a ceiling on fare increases. The salvation of the railroads is seen by some officers to lie, first, in getting an adequate level of basic mileage rates; then to put in, on specific profitable or competitive hauls, point-to-point fares at attractive bargains.

Air lines did better in 1949 than in 1948; buses did worse. In the first half of the year, air passenger-miles were up 15.2 per cent over those in the same period of

1948. Class I intercity buses, on the other hand, suffered a 0.2 per cent decline in operating revenues in the first half of the year; a 9.8 per cent decline in number of passengers carried (bus passenger-miles are not computed), and a 36 per cent decline in net income.

Equipment Best Ever

The railroads have on hand the finest physical wherewithal for attracting passengers they have ever possessed. A total of 292 sets of completely modern, named streamliners are in service—49 of them introduced in the 12 months ended November 1—so that a very large proportion of main-line runs are, in fact, "postwar luxury trains." Not accounted for in this reckoning are the large fleets of brand-new cars and locomotives on other passenger runs, which, because of the intermixture of so-called conventional equipment in their consists, cannot qualify strictly as "streamliners."

Sale of transportation and services on credit cards continued to grow during the year, reaching about \$1¼ million a month by the end of November, 1949, after 32 months' operation on a national scale. On the grounds that credit was too costly to administer in proportion to additional business gained, however, 15 carriers—all but two of them in the East, and including the two largest through passenger carriers in the country—withdraw from the plan, effective December 31, so that the usefulness of the credit cards will be greatly curtailed in the future. Most of the western and southwestern carriers are continuing the plan.

John L. Lewis' "on-and-off-again" war against the public brought another Interstate Commerce Commission service curtailment order during the year; roads with not more than 25 day's supply of fuel coal were ordered to reduce coal-burning passenger locomotive-miles by 25 per cent, effective October 25. The order was lifted on November 20. At the time of issuance, the Association of American Railroads estimated that not more than three per cent of the service would be affected at first, and that full effect of the order would bring only a seven per cent cut.

The railroads' safety record—which President Faricy of the A.A.R. calls "our biggest talking point"—was outstanding with respect to passengers during the first half of the year—only one passenger being killed and 172 injured in train accidents, compared with 17 passengers killed and 653 injured in the same half of 1948.

Year Sets New Patterns in FREIGHT TRANSPORT

By WILLIAM H. SCHMIDT, JR.

Transportation Editor



Both operating revenues and tonnage of intercity truckers increased in 1949, but operating ratios and net income were less favorable than in 1948

When you back off to look at 1949 in retrospect, the following things stand out with regard to freight traffic:

(1) Birth of a serious and concerted move to de-regulate the railroads' rate and service activities;

(2) Consummation of the postwar general rate increase movement by the roads—though they didn't get all they asked for—and establishment of a plateau from which judicious revisions in charges on individual commodities and hauls may henceforth be sought; and

(3) Awakening of public concern over the damage to highways by heavy intercity trucks and the obvious inequities of present bases for sharing of highway costs.

Meanwhile, railroad traffic and revenues declined somewhat and more traffic was lost to road and water competitors. An important part of the overall traffic loss was caused by prolonged coal and steel strikes, which not only dried up two primary sources of rail-

With new rate plateau, railroads set out to win traffic through more flexible pricing

road tonnage directly, but also curtailed the output of many businesses dependent upon steel and coal.

The country's population continued to grow at a rate far exceeding prewar forecasts, and by September, business activity had recovered from the "recession" of the year's first half. Most economists say that only too many strikes, another general wage increase, or higher taxation can halt a period of healthy business in the next year or so. Under their present disabilities with regard to price and service obligations and the burden of self-support, the railroads may suffer a further decline in their proportion of the total traffic. But the secular increase in the country's total shipping needs may counterbalance that loss. And it should be remembered that the railroads make money on what they haul—not what they *might* have hauled.

What of Traffic and Revenues?

As shown in the accompanying graphs, both tons carried and ton-miles declined on the railroads during the first eight months of 1949, compared with the corresponding months in each of the years 1942-1948. But they exceeded by substantial amounts the traffic in the "normal" year of 1949 and the defense-period years of 1940 and 1941. The 350 billion ton-miles the railroads hauled in the first eight months of the year and the \$4.8 billions of freight revenues they earned in that period compare with the results in similar periods of selected, significant years as follows:

Year	Ton-Miles (Per Cent)	Freight Rev. (Per Cent)
1948	- 14.5	- 8.2
1947	- 18.0	+ 5.4
1944*	- 29.3	+ 2.6
1939	+ 73.9	+139.3
1932*	+132.5	+198.2
1929	+ 19.0	+ 49.8

*1944 was the highest traffic year on record; and
1932 the lowest since 1909

Carloadings in the first 47 weeks of 1949 declined 16.3 per cent under the same period of 1948 and 18.1 per cent under 1947. The apparently greater decline in loadings than in ton-miles is a result of the fact that the period of comparison for the former is longer and includes the steel and coal strikes. Also, in a time of traffic decline, carloadings tend to decrease more than ton-miles because the roads take out of service their older and smaller cars.

So constantly have the railroads increased their basic efficiency that the breaking of records in important indices of good operation has become commonplace. The

importance of management's success in this direction appears to be underestimated. An all-time record was established in the first eight months of 1949 in "gross ton-miles per freight-train hour," which reached an average of 42,294—an increase of 7.6 per cent over the same period of 1948; 28.9 per cent over 1939; 72.3 per cent over 1929, and 184.2 per cent over 1920. This peak in what has been termed the best all-around measurement of smart train operation—because it accounts for distance, speed and weight behind the locomotive—was reached despite the fact that traffic in 1949 was less than in any year since 1941.

All-time records were also achieved in 1949 in average freight-train speed (5.0 per cent higher than 1948's); in cars per train (5.2 per cent higher than in 1948) and in freight-train load (2.4 per cent higher than in 1948). In statistics which measure utilization of cars—and are therefore more seriously affected by traffic levels, carload weights and shipper detention—the railroads did somewhat worse than last year, but well in contrast to prewar years. Miles per car per day, for example, were down 8.5 per cent under 1948, and less favorable than any of the years 1941-1947, but were better than any prewar year. Similarly, net ton-miles per loaded car-mile (average carload) were down 2.7 per cent under 1948, and slightly less than 1943-1945 and 1947, but better than any year prior thereto.

Rate Changes Ahead

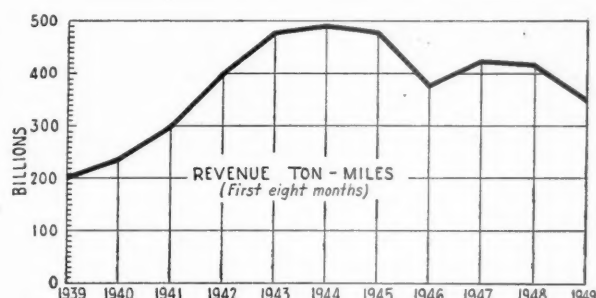
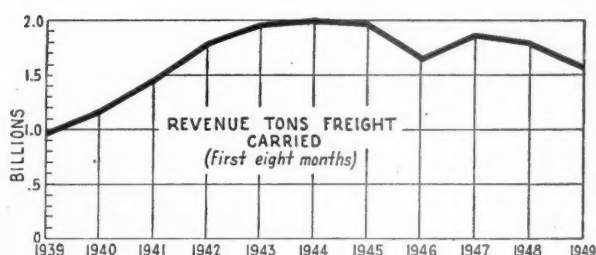
Additional increases in freight rates averaging 3.7 per cent were made effective September 1, 1949, following "interim" increases of 5.2 per cent made effective January 11, 1949 (both in Ex Parte 168). The two increases together are estimated to bring today's rates to about 9.1 per cent over base rates in effect at the close of 1948. Thus the railroads were granted only a part of the 13 per cent boost they requested in October, 1948. The railroads have been granted eight successive postwar rate increases, comprising together a rise of 57.3 per cent over the rates in effect on June 30, 1946. The increases vary considerably among territories as follows:

Eastern district	61.5 per cent
Pacahontas region	53.1 per cent
Southern region	58.1 per cent
Western district	52.9 per cent

Considering the fact that rates remained static during the war, when the prices of many commodities and wages increased substantially, the 57.3 per cent boost is not out of line with trends in the prices charged by the railroads' customers on the things the railroads move for them.

Unless inflation again takes the economy for a ride, it is likely that the railroads will ask for no further general freight rate increases. During hearings in Ex Parte 168, counsel for the carriers said they would "try to get along" without further advances. Indeed, there are signs that, already, the roads are making judicious cuts on highly competitive commodities which are, at the same time, desirable traffic. Some reductions already "in the works" concern potatoes in northern New England, dairy products from the central northwest, canned goods over a wide territory, and metal for remelting to Canada.

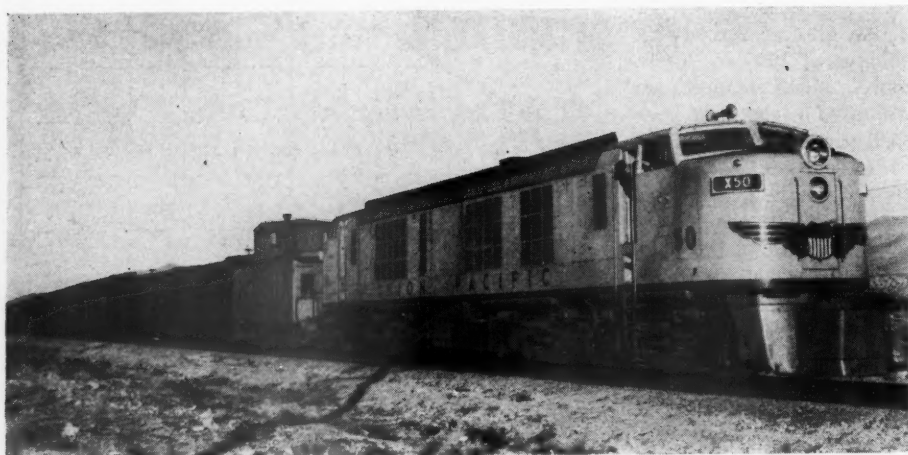
Rate reductions are not sufficiently widespread to call



a "trend," but, according to many observers, important moves are "in the wind." Findings by the Cost Section of the Interstate Commerce Commission's Bureau of Accounts that "manufacturers and miscellaneous"—the most competitive of railroad traffic—bore more than 62 per cent of the railroads' overhead burden in 1947, although it constituted less than 35 per cent of their ton-miles, may, some traffic men say, explain the nature of the diversion of traffic and indicate the strategy of both general and particular rate policies in the future. The purpose of making rates is to get revenue for the railroads—not to attain reasonableness, to exhibit long-term consistency, to relocate industry, or to pursue any other sociological aim. Over the years rate-makers have done what looked best at the time; what they did yesterday, they may not do tomorrow.

Probably there has never been more education and publicity on the subject of loss and damage prevention than occurred during the past year. In the 1949 "Perfect Shipping Campaign," a total of 308 shipper-sponsored prevention meetings were held in 201 cities, attended by 34,110 persons. Compared with the 1948 campaign, there were 19.5 per cent more meetings, 15.8 per cent more persons in attendance, and 34 per cent more cities participating.

To the extent that this impressive concentration of human effort got the man "who actually handles the freight" to do this job better—both on shippers' and carriers' property—it should show up in the record. It does. The ratio of freight claims paid to revenues received in the first five months of 1949 was 1.72, compared with 1.79 in the same period of 1948. During the first eight months of last year, according to preliminary estimates, claims paid, and charged to operating expenses, were 10.6 per cent less than in the same period of 1948. More significant, the amount involved in new claims received during this period showed a decrease of 23.1 per cent under 1948. As of August 31, 1949, the money involved in claims in suspense account was down 31.9 per cent compared with a year previous.



The gas turbine-electric locomotive, X 50, undergoing test by the Union Pacific, pauses near Garnet, Nevada, part way through its testing program that has been underway since July

Education—a Basic ELECTRICAL Requirement

The rate of application of electrical equipment has exceeded the capacity of the railroads to train men and coordinate practices

By **A. G. OEHLER**
Electrical Editor

A situation which can have a profound effect on electrical work done by the railroads exists within the Association of American Railroads. The secretary of the Electrical Section of the Mechanical Division has been retired, and the secretary of the Electrical Section of the Engineering Division will be retired in April, 1950.

Under the demand for new electrical information created by the advent of the Diesel-electric locomotive, the many new requirements for passenger cars, the need for developing caboose power, and a multitude of other new electrical requirements, Diesel clubs are springing up around the country and various groups of manufacturers and railroad men are finding it necessary to hold small meetings to cope with changing conditions.

Diesel-Electric Locomotives

The small groups cannot hope to set up standards and recommended practices, nor can they effectively correlate their own work and make it available to everyone. This should be done by the A.A.R. The situation suggests a combining of the two Electrical Sections, and the need for a full-time secretary. With good leadership, the A.A.R. groups can continue to dominate a field in which such work is being scattered.

Diesel locomotives now in service represent a total of more than 12,500,000 hp. This means an equal amount of both motors and generators, or 25,000,000 hp. Actually, these machines must have a capacity which is

1.8 times this value because they must deliver their rated output at both low and high speeds. Therefore, from a maintenance man's point of view, there are motors and generators to maintain, totaling 45,000,000 hp. This does not include auxiliary machines or control equipment.

Maintenance is not eased by the fact that practically all Diesel locomotives employ nose-suspended motors. European designers decry this practice, saying it is too hard both on motor and track, and that all high-speed locomotives should have some form of flexible drive in which all of the motor's weight is spring borne. We have what we have, and it may be the best, but the situation evidently requires rugged motors, smooth control and close attention to track surface, if these locomotives are really going to deliver their horsepower to the train with tolerable maintenance costs. One factor which tends to support present American practice is that designers have been able constantly to reduce the weight of traction motors.

Gas-Turbine Locomotives

Two new uses of Diesel locomotives are their application to suburban passenger service and their use as roving locomotives which meet operating schedules for hauling both freight and passenger trains over various divisions, sometimes staying away from headquarters for nearly a month.

The gas-turbine-electric locomotive is now being used

in revenue service. Observers have become so enthusiastic over its performance that manufacturers have received many orders. The builders are not in a position to accept such orders, for there is yet much development work to be done. It should be remembered that the Diesel-electric locomotive is now just 25 years old, and we are still looking upon it as an innovation. To be sure, the Diesel has done much of the ground work for the gas-turbine locomotive, but the Diesel holds a peculiar advantage in the switching field and is strongly entrenched as a road power unit where the gas-turbine locomotive must first try to compete.

Diesel Shops

Demand for Diesel shops increases constantly and a recent compilation made by *Railway Age* shows that there are now 280 Diesel locomotive repair points on 69 U. S. railroads. It has become pretty well established that railroads will do a major part of their own heavy electrical repair work when they have a sufficient number of locomotive units to justify this arrangement.

It is also becoming apparent that this heavy repair work can best be done at a single point on the railroad. Just what should be done in these shops, how it should be done, and how changing requirements are to be met, is still a subject for much discussion. For example, the degreaser for cleaning electrical machines is finding favor on the railroads, but its use requires the consideration and cooperation of insulation manufacturers and machine designers. Various new tools for the electric shop have appeared during the past year, including armature machines, brazing machines, induction heaters for motor pinion removal, electronic bar-to-bar testers and high-frequency and dip-type soldering machines.

No railroad has had the courage to make a major installation of straight electric traction for many years. Studies have been made for specific lines with high traffic density, but applications did not follow, primarily because of the high capital investment required and the fact that the electric locomotive cannot run out from under the overhead wire.

Electrification

Engineers, however, see possibilities of further applications and have combined their studies to show how the cost of locomotives and power distribution systems may be lowered. It is conceivable that pressure of fuel prices may force the issue.

A new potentiality is appearing on the horizon in the form of a rectifier car which is now under trial in regular service. It has been made possible by recent improvements of mercury-arc rectifiers. With one of these on the car, alternating current from the overhead wire is changed to direct-current power for the motors. The rectifier is a lightweight device with no moving parts and the d.c. motor is ideal for traction purposes.

It is conceivable that locomotives so equipped could be operated from regular 60-cycle commercial power, thus doing away with substations, transmission lines, and other expensive taxable property.

The major electrical problem connected with passenger cars is that of power supply. Axle-driven generators

are used in 90 per cent of all applications, but they are being hard pressed to meet the larger load demands, particularly where operating conditions permit little or no terminal or yard charging of batteries.

Propane engine-driven generators and compressors supply most of those air conditioned cars which have no axle generators or have such generators of insufficient size.

Four manufacturers are now making under-car Diesel-generator power plants to supply all the power needs of passenger cars even including heating. A few applications have been made and others are in progress. In one case, a single plant of this kind on the observation car is used to keep up the batteries on the axle-generator cars on the rest of the train. This is a case in which with short running time and relatively long layover time in locations without charging facilities it is impossible for the axle generators to keep up with the load demand.

The use of alternating-current power on passenger cars is increasing and larger inverters and motor-alternators have been developed to meet this demand.

Caboose Power Supply

Most of the power used on cabooses for the operation of train communication equipment is developed by axle generators. Small Diesel engine-driven generators are also used for this purpose. The most recent developments in this field consist of small a.c. generators driven in some cases by vee belts from the axle and in others by air motors operated from the brake line, which develop 6- and 12-volt power by means of selenium rectifiers. Reduction of brake-line pressure sufficient to cause a brake application is prevented by a relay which cuts off the motor at a predetermined pressure.

Yard Lighting

Developments in lighting technique aided by improved equipment are doing much to improve yard lighting. The value of such lighting has been accepted to such an extent that the value of higher intensities is generally recognized, and such expedients as silhouette lighting are no longer a necessity. Locomotives in the yards operate without headlights and photo-electric cells cause the lights to be turned on and off automatically as required. Wiring for such lighting has been greatly simplified by the development of non-metallic cable of long life which can be laid directly in the ground.

Innovations

Reaching into the field of pure science, the railroads are now making use of the spectroscope and the X-ray. The former is being used for the analysis of lubricating oil. By showing the presence of impurities such as iron, aluminum or copper, it serves to detect a defective condition in an engine, and thus allow steps to be taken to correct trouble before it becomes serious.

One railroad has installed its own X-ray laboratory and uses the X-ray to inspect a great variety of things ranging from spark plugs to heavy castings. In the latter application, the defect in a casting may be discovered before an expensive machining job is undertaken.

By **JOHN H. DUNN**
Signaling and Communications Editor



SIGNALING— An Increasing Economic Asset

A larger program of signaling construction is justified not only by improved safety of operation, but also by better train performance and savings in operating expenses

Strikes, reductions in traffic, increased operating expenses and other adverse circumstances in 1949, particularly in the last half of the year, all had a tendency to retard the construction of new railroad facilities, but in spite of these unfavorable circumstances, the volume of new signaling placed in service during the year as a whole continued at a high level. The signaling installed, as reported in another article in this issue, totaled 11,874 units, which is two units more than the previous peak of 11,872 units for 1948. As compared with a longer period, the 11,874 units installed in 1949 is 3,047 more than the 8,827 average for the 11 years, 1939 to 1949, inclusive. Furthermore, because of the continuing need to save train time and to reduce operating expenses, brought about in part by the 40-hr. week, a larger volume of signal construction is anticipated, not only for 1950, but for the next several years.

Some 40-Hr. Week Problems Solved

Signaling and interlocking projects, including highway grade-crossing protection, which have been held in abeyance because they could not be as fully justified economically by the savings to be accomplished under wage rates prevailing previously, are now being reconsidered on the basis of the 40-hr. work week. The annual operating expense for an open block office or an outlying interlocking, including wages for operators or levermen, as well as building maintenance and incidentals, has been calculated on one large railroad to total \$15,000.

In consideration of cash available and other financial factors, some roads may calculate that an annual saving of \$15,000 will justify an expenditure of \$75,000 to

\$100,000 or more, and one road has set \$120,000 as a limit. On this basis, many roads are making investigations to determine the locations at which signaling facilities, such as remote control or centralized traffic control, will permit the closing of open offices or outlying interlockings. In addition to the savings in wages of levermen and operators, the new modern signaling systems will effect other money savings, as well as improve train operation.

At railroad grade crossings with streets or highways—where watchmen or gatemen are now on duty one, two or three tricks every day—the increased labor cost under the 40-hr. week will warrant larger expenditures for the installation of automatically controlled flashing-light signals and electrically operated gates. Such a program of crossing protection was adopted in Mishawaka, Ind., where there were 30 crossings of streets at grade with the double-track main line of the New York Central. A cooperative program was developed to close 10 of the 30 crossings and to install flashing-light signals with short-arm gates at all of the remaining crossings.

This installation has now proved not only that many little-used crossings can be closed without undue inconvenience to the public, but also that a uniform type of protection at the remaining crossings—in service a full 24-hr. day—provides improved safety and obviates the necessity for drastic reductions of train speeds. These results at Mishawaka are typical of what can be accomplished in numerous towns and cities, and on account of the increased savings possible with the 40-hr. week, many railroads are now planning large programs of crossing protection, one large railroad having authorized an expenditure of \$500,000 for this purpose in 1950. Numerous other roads have similar programs, so that expenditures for crossing protection should reach a new high in 1950.

In 1949, perhaps as never before, many railroads adopted the policy that, when installing modern signaling, track layouts must be modernized first, not only to secure efficient train operation, but also to eliminate

unnecessary signaling expenditures. Track layouts are a factor because a major portion of the expenditures for either automatic block or centralized traffic control is associated with siding switches.

A decision to eliminate first those sidings and other switches which will not be needed with the new signaling will result in a reduction in the first cost of the signaling, and often bring C.T.C. within range of funds available. For example, on a 170-mi. single-track section of the Louisville & Nashville, handling 12 to 14 trains daily, the installation of complete centralized traffic control, rather than conventional automatic block, was made possible by eliminating 13 of the previous 24 sidings. Similarly, in connection with the installation of C.T.C. on 324 mi. of single track between Salt Lake City, Utah, and Caliente, Nev., the Union Pacific eliminated 21 sidings. Also, the Rock Island, when installing C.T.C. on 231 mi. of single track between Herington, Kan., and El Reno, Okla., eliminated 19 of the 34 sidings, on a line that handles 16 to 20 trains daily. Generally, 30 to 50 per cent of the sidings can be eliminated with C.T.C. operation.

Fewer sidings, equipped with power switches, serve adequately because power switches permit trains to save 10 to 15 min. each time they make a move, such as out of one siding, over a section of main track and into another siding. The time saved permits a train to be advanced further. Also to be considered is the fact that on a 120-mi. division, the C.T.C. gets a train over the road about two hours faster, most of which time was previously lost on sidings. Siding occupancy is thus reduced so that fewer are needed. The information accumulated with reference to reducing the number of sidings will be an important factor in the future when determining whether to install conventional automatic block or to do a modern scientific job by revising the track layout and installing C.T.C.

Car Retarders in Smaller Yards

Car retarders and power switches in service in about 35 large classification yards have proved, during periods of up to 20 years, that such facilities not only expedite operations and increase yard capacity, but also reduce operating expenses by eliminating car riders and switch tenders. That these facts are well recognized is evidenced by the installation of retarders and power switches in seven large yards during 1949. Now, with increased wage costs due to the 40-hr. week, car retarders and power switches can be justified economically in many smaller yards, as has been demonstrated in a yard on the New Haven at Providence, R. I.

In 1949, an announcement was made of a system of control for classification yards, in which all the switches for a route from a hump to each classification track are controlled by pushing a button. The various buttons are on a panel which can be located at the crest of the hump, or in a tower, where an employee can push the proper button for each car or cut of cars. This switch-control system is being installed in a yard on the Canadian Pacific at Montreal, Que., and by the Illinois Central in connection with the reconstruction of its Markham yard, near Chicago. This installation is now 90 per cent complete, and is scheduled to be in service about February 1.

A factor affecting signaling construction during 1949

was the pending action on the order of the Interstate Commerce Commission, issued in 1947, requiring the railroads to install "a block system" on lines not now so equipped on which freight trains are operated at 50 m.p.h. or more and passenger trains at 60 m.p.h. or more, and protection, such as train stop, train control or cab signaling, in territories where trains are operated at 80 m.p.h. or more. At the time the order was issued the railroads furnished data on train speeds then in effect. An estimate was that "a block system" was required on 17,473 mi. of track, and train-stop, train-control or cab signaling on 23,500 mi., as listed in detail in the August, 1947, issue of *Railway Signaling*. On some sections, various railroads have complied with the order by reducing train speeds.

Effects of I.C.C. Order

Twenty-two railroads petitioned the commission for relief from all or certain portions of the order. Hearings were held, and decisions applying to several roads were issued in 1949. Authority to operate trains at more than 80 m.p.h. in centralized traffic control territory was denied to several railroads, including the Chicago, Burlington & Quincy and the Union Pacific. As applying to the Santa Fe, the commission postponed, until further notice, the requirements of the order insofar as it calls for automatic train stop, train control or cab signaling devices on *freight* locomotives.

Some railroads, including the Seaboard Air Line, the Western Pacific, the Soo Line, the Nickel Plate and the Spokane, Portland & Seattle, made sizable installations of either automatic block or centralized traffic control in 1949 that may be considered as compliance with that part of the I.C.C. order to install "a block system." The 1949 installations on these five roads in 1949 totaled about 1,000 mi., which is roughly 5.7 per cent of the estimated 17,473 mi. mentioned above. Much of the remaining mileage will be equipped with automatic block or centralized traffic control as fast as practicable—the incentive, in addition to the I.C.C. order, being increased safety, savings in train time, and reductions in operating expenses which, on several large C.T.C. projects, have ranged from 25 to 30 per cent or more on the expenditures that were required. These savings are being further increased under the 40-hr. week.

Additional protection, such as train stop, train control or cab signaling, has been installed during the past two years on portions of the Union Pacific and the Chicago, Milwaukee, St. Paul & Pacific. Some of the other roads to which this portion of the I.C.C. order applies are not acting in advance of decisions on applications to the commission for relief from the order. In the meantime train speeds are limited to less than 80 m.p.h. When the final decisions are issued and the railroads proceed to install train stop, train control or cab signaling, five or six years will be required to equip all or even a major portion of the approximately 23,500 mi. of track on which trains were operated at 80 m.p.h. or more when the order was issued.

A recapitulation of all the factors which influence signal construction indicates that, not only to comply with the I.C.C. order but also to improve safety, save train time and reduce operating expenses, the railroads will undertake a large quantity of signaling installations during the next few years.

1949 in Railroad COMMUNICATIONS

Yard and road radio costs surveyed — Microwaves adopted for transmission of communications in lieu of pole lines — Printers, long-distance phones, and carrier equipment increased

By MAURICE PEACOCK

Associate Editor—Signals and Communications

The railroads in the United States and Canada made a good showing during 1949 in the installation of new communication facilities, and the prospects in this respect for 1950 appear favorable at this time—especially in view of the 40-hr. week and efforts to increase overall efficiency and cut operating costs.

There were slight decreases in the amounts installed of new railroad and commercially owned pole lines, railroad-owned copper wire, train dispatching telephones, yard loud-speakers and radio, and road radio. On the other hand, some sizable increases were noted in other facilities placed in service, such as new printing telegraph, long-distance telephone circuits, and carrier equipment for superimposing these circuits on existing line wires. The detailed figures applying to these and other communication facilities installed in 1949, and a discussion thereof, appear elsewhere in this issue.

More Cars Handled Per Hour

Of interest during the year were reports on the costs of radio operation in yard and main-line service on the Denver & Rio Grande Western, and on the Pennsylvania's inductive trainphone system, presented by Committee No. 9—Economics, of the Association of American Railroads' Communications Section at its 26th annual session in Portsmouth, N. H., last September. According to one of the reports, studies made by the Rio Grande of radio operation in yard service revealed that the average cost of this operation per engine-hour, for the entire system, was \$0.1316, with a maximum cost of \$0.209 at any one location. These were 24-hr. day figures, regardless of whether the engines were in service, and included interest on first cost, depreciation, parts, maintenance labor and traveling expenses.

The Rio Grande utilizes both radio and inductive equipment in main-line operations, radio being used for end-to-end communication and the induction equipment for train-to-wayside communication. The average cost was \$0.212 per train-hour, which was also based on 24 hr., regardless of whether the locomotives and cabooses were in operation. This figure includes interest on the investment for wayside stations, depreciation, parts, labor and traveling expenses.

As to specific savings effected in yard and main-line operations as a result of the installation of these com-



There was a substantial increase over 1948 in the amount of new printing telegraph circuit mileage installed on the railroads in the United States and Canada during 1949. View shows Telegraph Manager H. E. Burling (standing), and B. L. Friedly, of the Norfolk & Western, at printing telegraph machine in Portsmouth, Ohio

munication facilities, it was felt by the Rio Grande's communications department that the railroad was getting at least a five per cent increase in the number of cars handled per engine-hour in yard service, as well as improved service to shippers. In main-line operation, according to the report, train-sheet studies revealed improvements in some instances and poor performance in others.

Saved 52 Train-Hours Daily

Committee No. 9's report on the Pennsylvania's inductive train communication system showed that a three-day check in October, 1948, use of the trainphone on four branches or divisions, plus all other lines equipped, indicated a total saving of 52 train-hours daily. Intangible benefits were secured from 551 trainphone calls made daily from block stations and freight and passenger trains, and there was a total of 260 improved train movements as a result of the calls. These calls related to abnormal conditions on trains and engines, on other trains and engines, track conditions, and to

operations of the trains involved. Prompt reporting of the abnormal conditions when seen, and notification of trains involved or block stations, permitted correction of numerous potential causes for delays, with resultant improvements of service.

According to an additional source of information, another railroad reports that radio has increased the capacity of a freight classification yard by 20 per cent through increased operating efficiency. The Union Pacific, in connection with its large radio-equipped yard at North Platte, Neb., has reported a 98 per cent record on delivery promises, as against 70 per cent before the installation of radio. This report also points out that eight engines were doing the work of nine, and that the radio system had amortized itself in six months.

Microwaves Adapted to Railroad Service

During the latter part of the year the Chicago, Rock Island & Pacific announced that it was installing microwave relay equipment for "point-to-point" transmission of communications on a "radio beam" between stations at Goodland, Kan., and Norton, 110 mi. Microwaves have been used previously for purposes other than railroad communications; for example, in 1948 and 1949, they played a very important part in the expansion of television.

The Rock Island's project between Goodland and Norton will enable the railroad to communicate "through the air," without having to depend on its pole line between those points, this section having been chosen first because of severe line-wire and pole-line damage which has been experienced in the past as the result of bad ice, sleet and snow conditions. In addition to terminal stations at Goodland and Norton, automatic repeater stations are to provide communication for intermediate points. The microwave equipment, including the repeater stations, is to be used to provide five voice channels, one control and one telemetering channel. The system is expandable up to 32 voice channels, plus a number of telegraph, printing telegraph and other circuits.

During 1949 the railroads lost 40 radio frequencies—19 in the Chicago area and 21 in other areas—as the result of a Federal Communications Commission order, effective last July. This order included overall revisions in the commission's rules governing, and the frequencies employed by, the so-called specialized non-broadcast radio services. However, the order gave the railroads eight "developmental" frequencies in the 450-460 megacycle band on a shared basis with urban transit services. Under this arrangement, the railroads now have for use in the Chicago area 41 frequencies, 39 of which are also available for use in other areas. In these other areas, the 39 frequencies are also available to the public safety radio service, on a secondary basis, providing such use does not cause interference with railroad operations.

In addition, during the year, several manufacturers announced production of a new line of so-called highly selective mobile radio equipment for adjacent-channel operation. Prior to the development of this equipment, limited selectivity of some mobile radio receivers made it impracticable for the Federal Communications Commission to assign adjacent channels to users in any one area without resulting radio interference. With this technical limitation lifted, allocation of frequencies will be

more flexible although some equipment changes may be required.

Reports presented last September by Committee No. 4—Radio and Allied Communications as Applied to Railroad Operations, of the A.A.R. Communications Section, revealed progress in the radio and inductive train and yard communication fields between May, 1948, and May, 1949. For example, the total number of radio equipments that had been authorized for railroad service up to May, 1949, was 2,549, which compared with 1,391 authorizations up to May, 1948—an increase of 1,158. Thirty-three additional transmitter authorizations, involving 13 railroads, were issued between May 15 and August 10.

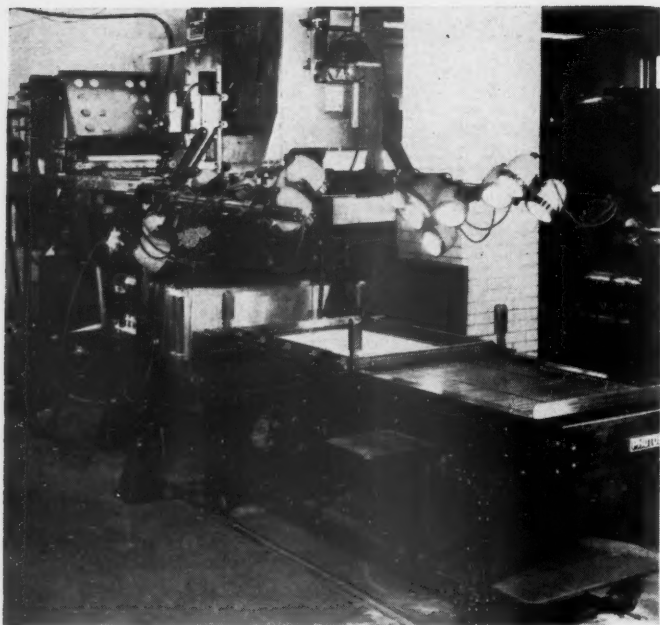
The total number of inductive carrier installations on railroads in May, 1949, was 1,064, compared with 893 in May, 1948, an increase of 171 installations. During the same period, the number of railroads using radio and/or inductive communication equipment rose from 43 to 72, an increase of 29. Other statistics on radio and inductive train and yard communications appear elsewhere in this issue.

Big Jump in Carrier Equipment

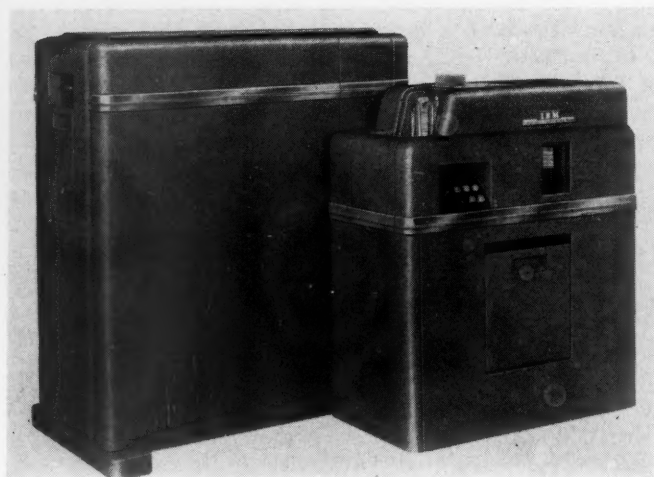
As mentioned previously, there were increases in the new mileage of printing telegraph and long-distance telephone circuits between distant points in 1949, compared with 1948. To provide the increased line capacity required for these facilities, many roads installed carrier equipment and, accordingly, there was a substantial increase over 1948 in the amount of such apparatus installed in the United States and Canada. Carrier equipment permits the superimposing of additional telephone and telegraph circuits on existing line wires, thus eliminating the initial cost of the new wire which would be required if straight physical circuits were employed. At the same time, line maintenance is kept down to the extent that new wire is not installed — another important point in view of the 40-hr. week.

As a means of providing improved telephone communication service, many roads have installed dial automatic exchanges at a number of points on their systems which are connected by railroad-owned circuits. Such facilities not only permit the more rapid and efficient handling of calls, compared with manual-exchange operation, but enable the number of telephone operators required with manual operation to be reduced substantially. Automatic exchanges interconnected by railroad circuits also result in the elimination of toll charges and federal taxes which would be incurred if telephone calls were routed by commercial telephone lines and exchanges. Some of the roads which have installed such facilities at important points and between distant cities include the Southern Pacific, the Norfolk & Western, Missouri-Kansas-Texas, North Western, Atlantic Coast Line, Baltimore & Ohio, Missouri Pacific, New York Central, Pennsylvania, Union Pacific, Illinois Central, Santa Fe, Great Northern, and Reading.

The installation of such telephone networks along with the other modern communication facilities has not only effected increased efficiency from operating and economic standpoints, but has afforded improved service to shippers and passengers. All things considered, the roads in the United States and Canada did a good job in communications during 1949.



Left—Photocopying of various documents has gained increasing popularity on the railroads. This Photostat machine is used by the Pennsylvania in the preparation of freight bills (See *Railway Age*, September 17, 1949, page 90.) Below—Punched card machines are doing more and more of the railroads' accounting work. This electronic calculating punch performs division and other calculations and punches the results into the card, at the same time checking calculations



By J. W. MILLIKEN
Associate Editor—Purchases & Stores

BOOKKEEPING Machines Supersede Pens

Economies are produced in accounting departments by mechanization of the work, while necessary operating data are supplied currently — result, more efficiency

In the forefront of railroad progress in 1949 — as it will be in 1950 — has been the work of the accounting departments, which have improved their methods and procedures to the point where they now more than ever are real tools of management rather than mere recorders of history after the event. High prices of materials and labor, plus the spur of competition, have been great factors in promoting this progress, for management has asked for figures which can point the way to means of meeting these threats to the continued well-being of the railroads, and the accountants have been obliged to produce them quickly. Afforded modern tools with which to work, the accounting departments have improved their product and thereby proved the statement of John Barriger, president of the Monon, that "Not even the Diesel locomotive or centralized traffic control can do more to help the railroads than modern accounting methods."

To effect this modernizing, the railroads have required much new machinery and many changes in methods, procedures and forms. Machines have taken the place of the pen and pencil, to a large extent. In 1949, the railroads made large expenditures for tabulating equipment, photocopy cameras, bookkeeping machines, elec-

tric calculators, duplicating machines of various types, new electric billing machines, etc. During the year, for instance, 21 railroads installed more than 350 punch card machines of various types. Continuing their improvement programs in 1950, the same lines plan to place in service at least 450 more such machines. This equipment is being employed somewhere in the performance of almost every conceivable accounting job.

Mechanically Produced Payrolls

One of the "hottest" of recent developments, in connection with the use of tabulating equipment, is the use of a "mark sensing" device. Five railroads have reported the use of this comparatively inexpensive "gadget." The Denver & Rio Grande Western utilizes this device in preparing inventories of materials and supplies. With this method, inventory tags are on unpunched cards, and a cross is made through a number corresponding to the total of the units of material on hand, and another mark is made through another figure which is the unit price. These cards are then run through a mark sense reproducing punch, which automatically punches these figures into the cards. Next

the cards go to the multipliers which extend the figures and punch into the card the total value on hand.

Other tabulating machines then take over to do the other necessary work of listing, totaling the value of A.A.R. material classes, etc. The Gulf, Mobile & Ohio and Baltimore & Ohio, on the other hand, have begun the practice of preparing agency cash record statements, following the same general system. The Boston & Albany and the Canadian National use it in the preparation of payrolls. Railroads which utilize this instrument report its main advantage to be speedier card punching.

The preparation of payrolls has become an increasingly expensive operation in the last several years, with withholding taxes, railroad retirement, relief, payroll savings, etc., to be deducted from the paycheck. Also, some states already have made weekly payments mandatory to some classes of employees, while others are expected to do so in the near future. The Great Northern, Illinois Central, C.N.R., N.Y.C., Chicago & North Western, Southern, and Monon recently have placed most of their payroll work on punched card machines. Like the St. Louis-San Francisco, which in 1949 began to use a two-part pay draft card, on the stub of which are listed all the deductions from the employee's gross earnings, many roads are adopting this system.

Car accounting, always an expensive and time-consuming process, has been economized in recent years through another use of tabulating equipment. Several years ago the New York, New Haven & Hartford began a really modern use of tabulating equipment in car record work. (See *Railway Age* of February 23, 1946, page 394.) That road, in 1949, extended the system to three other terminals, and in 1950 expects to increase by one or two the number of stations in the network reporting to New Haven. The 1949 program required about 19 pieces of tabulating equipment and 24 Teletype transmitters and receivers. Other railroads, including the Missouri-Kansas-Texas, B. & O., Wabash, Chicago, Burlington & Quincy, Union Pacific, and Chicago, Rock Island & Pacific, began somewhat similar systems of handling car records in 1949 or will do so in 1950.

Freight accounting, which involves a heavy volume of dividing and prorating the total freight charges for a given shipment among the carriers participating in the haul, always has been a time-consuming process. For a number of years some portions of this work have been mechanized, but within the past year more efficient systems have been established. Several railroads, among them the Western Maryland and the Richmond, Fredericksburg & Potomac, in 1950 will begin performing this work in a manner similar to that used by the Reading (see *Railway Age* of May 14, 1949, page 42).

Freight claim accounting has become especially important in the last few years as a result of the railroads' huge bill for loss and damage. To curtail recurrences of damage to shipper's products, the railroads have set up loss and damage prevention organizations. These groups have been aided by mechanization of railroad claim accounting, for such accounting prepares up-to-date statistics on the commodities which are sustaining the damage, as well as the causes and costs. Hence the prevention departments, and the police, too, can determine where bad situations may be developing and then apply whatever remedies may be possible or desirable. The Milwaukee and the N.Y.C., for example, are two

railroads which have found that mechanization of freight claims work has been a real aid to prevention forces.

Form design frequently has been considered as a fertile opportunity for economies for the railroads. Several roads have retained firms specializing in form design to see if economies can be effected. The Central of New Jersey, on the other hand, reports it is doing some experimentation of this type on its own. Change of design on one form alone has made possible a saving of some \$3,000 in a year.

Greater Utilization

One of the outstanding accomplishments reported to *Railway Age* by railroad accounting officers is the extent to which better utilization of present equipment is being realized, including the centralization and consolidation of accounting work, with corresponding economies. The case of the Atlantic Coast Line may be cited as typical. During 1949 the Coast Line made a series of time studies which indicated not only how much time each machine was idle, but the period of the day, day of the week and week of the month during which the idleness occurred. Consequently, the A.C.L., in 1949, was able to put the following processes on tabulating equipment, without any increase in the number of units of equipment: 1. Balancing and listing of correction accounts; 2. listing and balancing of agency drafts; 3. inbound interline freight received recapitulations; 4. bills collected; 5. vacations for train service employees; and 6. I.C.C. report form A and annual reports to state commissions. In 1950, the Coast Line expects to add its checking of reports of overhead waybills, the handling of overcharge claims, and the computation of income tax withheld from each employee.

Accounting departments have many plans for 1950. A survey of the proposed activities of one railroad will illustrate the trend. The New York Central has indicated that in 1950 it will: 1. Further mechanize its car accounting procedures; 2. consolidate and mechanize preparation of statistical reports; 3. adopt standard, basic tabulating machine-produced statements, in lieu of manually prepared side statements; 4. establish a system for equalizing maintenance-of-way expenses; 5. simplify maintenance-of-way timekeeping and labor and material distributions; 6. mechanize work relating to I.C.C. valuation order No. 3, including the record of property change, BV-88 reports, and equipment investment records; 7. use stencils or offset printing in preparation of collection bills; 8. mechanize the handling of rental collection bills; 9. simplify the handling and sorting of purchasing department invoices; 10. centralize and simplify fuel accounting work; 11. simplify the accounting for returnable materials such as drums and reels; 12. mechanize handling of personal expense drafts; 13. simplify joint facility billing; 14. mechanize control of interline passenger ticket stock; 15. simplify the accounting of one of its subsidiaries, which is estimated to eliminate some 50 reports, possibly reducing the clerical force by 6 or 7 persons; and 16. handle accounts receivable in a more expeditious manner and eliminate the bookkeeping machines presently used in this work. The ambitious program of the New York Central is going to require much new accounting equipment.



Canada's railway situation during the year just closed presented the pattern of a crazy quilt. To make a clear picture it is necessary to revert to events of the previous year, 1948. After months of hearings the Board of Transport Commissioners awarded the railways a freight rate increase of 21 per cent, as against 30 per cent asked by the carriers, the award being made in March, 1949. Though regarded by the railroads as totally inadequate, even this meager rise was bitterly fought in Parliament and outside by seven provinces—the four west of the Great Lakes and the three Maritime provinces (Newfoundland had not yet entered the Canadian confederation).

This political battle over freight rates broke not so long before the federal general election, and the Dominion government, then led by Mackenzie King, sought to soften the political shock by reconstituting the Transport Board, naming Justice Maynard Archibald of Halifax as the new chairman in the place of Col. James Cross, who was retired.

Royal Commission Appointed

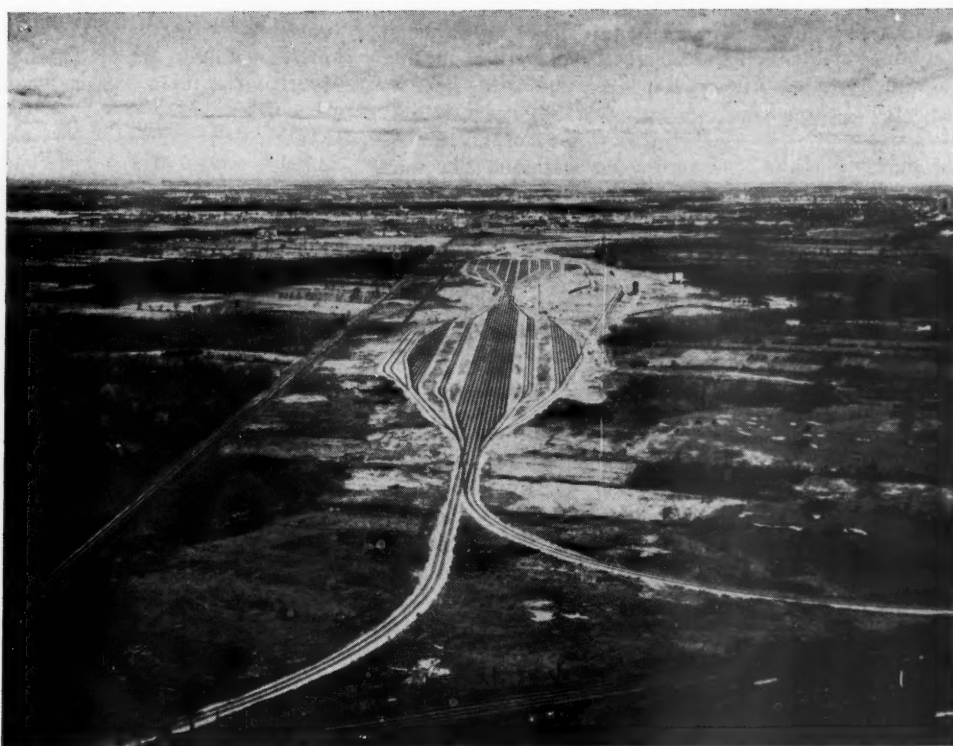
But what complicated the situation was that the King government also created a Royal Commission on Transportation. This was ostensibly done to have matters about which Parliament would have to take action taken out of the hands of the Board of Transport Commissioners—which had rate regulatory powers and the duty of administering the Railway Act and ruling on rate cases. The Royal Commission was given power to consider wider problems—economic, geographical and almost political. It was widely regarded as a con-

Political Confusion

cession to radical groups in Western Canada who were making the loudest noise against the 21 per cent freight rate increase.

At the same time the King government sent back to the Transport Board its decision in the case of the roads' application for a 30 per cent increase, asking the board to review the case. About this time the railways, responding to a big wage boost which they contended nullified the 21 per cent increase, applied for another freight rate increase. So the Transport Board had the confusing task of considering at the same time objections to its award of the 21 per cent rate rise and the railways' new application for a further increase.

After weeks of argument the new Transport Board headed by Justice Archibald granted the railways an "interim" rate increase of 8 per cent, and at the same time declared that the 21 per cent rise awarded a few months previously was too high. What incensed the railways was that although the new board's chairman admitted the roads needed help it awarded them less than half of what they asked for in their second application. Moreover, the board gave as its reason for not making a complete or final award the fact that a Royal Commission was holding sittings across the country on other transportation questions, including the capital structures of both the Canadian Pacific and the Cana-



Hampers CANADIAN ROADS

Court upsets Transport Board's "inadequate" rate decision while Royal Commission explores national transportation policy

By OUR CORRESPONDENT AT OTTAWA

dian National, and also cooperative savings and uniformity of accounting.

Late last fall the Canadian Pacific filed an appeal with the Supreme Court of Canada objecting to the 8 per cent decision of the Transport Board, contending that the board had failed in its duty when it gave only an "interim" award, and that if the railways were to be obliged to await the report of the Royal Commission on related railway matters the lapse of time would wipe out their chances of balancing their books.

Again seven provinces, four in the West and the three Maritime provinces, lined up against the railways in the Supreme Court proceedings, but late in December the court ruled in favor of the C.P.R., criticising the

board severely for "declining jurisdiction" in favor of the Royal Commission and labeling the board's reasons for holding up a final disposition of the rate case "entirely irrelevant." It was expected that this decision would be followed by applications by the railroads for authority to effect additional rate increases.

At least two other developments of 1949 which tended to add complexity to the railway freight rate situation were before the Royal Commission on Transportation at the year's end. As a reply to the previous final and complete abolition of the Rocky Mountain differential freight rate, which was in its latest application yielding about \$2,500,000 revenue to the C.P.R., that road argued before the commission that the Crow's

Nest Pass rates should be abolished. These were special statutory rates on grain and other commodities moving from the prairies to the Pacific coast and to the head of the Great Lakes. They were granted originally as part of the pact between the C.P.R. and the government for the building of the road across the continent. The road received a cash subsidy, along with land, and in return it undertook to give low rates to the Pacific coast. These finally applied to certain commodities moving to the head of the Lakes. From evidence submitted to the Royal Commission by the C.P.R. it was indicated that under present traffic conditions that road was losing about \$18,000,000 a year, and the Canadian National a slightly smaller amount, by the working of these arrangements.

Industrial, commercial and even political interests have been active in conceiving and presenting to the Royal Commission new proposals for getting freight rates down. One of these was that devised by the province of Alberta for an "equalization" of freight rates as between Western and Eastern Canada. This was no surprise to the railways for they likewise have been studying this problem, and counsel for the Canadian Pacific told the Royal Commission that the railways were proposing equalization of the standard class rates, the distributing class rates and the commodity mileage scales as between Eastern and Western Canada.

But counsel for the Canadian Pacific took care to inform the commission that the railways did not propose and did not believe it advisable or practicable to attempt equalization of special commodity rates or competitive rates.

At another stage in its presentation to the Royal Commission the Canadian Pacific took care to stress the evil of subsidy, with obvious reference to the frequent necessity of Parliament voting money to the Canadian National to meet interest charges, also to recent political moves, such as the acquisition by the federal government of the almost defunct Temiscouata Railway in eastern Quebec at a cost of \$450,000, a line which Canadian National executives stated would cost that road, which is to operate the line, over \$1,000,000 to bring up even to branch line standards.

New C.N.R. President

"Those whose incomes are a charge on the public purse," said C.P.R. counsel, "are not given to removing the source of their livelihood at the earliest moment that it can be dispensed with. It is so also with the receivers of subsidies. There are always reasons why subsidies should be continued, and if they are continued they end by growing themselves and by contributing to the creation of others."

Another outstanding railway event of the year in Canada was the naming of a new head for the Canadian National. Donald Gordon, deputy governor of the Bank of Canada, was appointed president of the publicly owned road to succeed R. C. Vaughan, who retired at the end of the year. Mr. Gordon, who took over on January 1, was the subject of an article in *Railway Age* of December 17, 1949. Well known to the people of Canada through his wartime duties as head of the board controlling prices and rationing, he gained a reputation as an alert, affable, resourceful fighter. A man of almost inexhaustible energy, he has been com-

pared in manner and the way in which he attacks a problem to Sir Henry Thornton, first president of the present Canadian National and possibly its most effective salesman.

Canadian railway operations during 1949 showed notable advances over 1948, particularly in the light of the many adverse traffic factors that prevailed in the late months of the year, such as the cut in traffic headed for Britain. Canadian National operating revenues for the complete year 1949 will be about \$499,000,000 and operating expenses about \$480,000,000. A similar performance, relatively, will be shown by the Canadian Pacific when final figures are compiled.

The future of the two railways will to a considerable extent depend, immediately, on the outcome of the present Conciliation Board hearings on wage boost applications by unions representing 135,000 employees, and, on a long-term basis, not only on the final outcome of the freight rate fight which has been remanded to the Transport Board, but on a change in the attitude of Western provinces, particularly on the tangled question of highway competition. It is considered almost inevitable that the Royal Commission, which has received strong representations not only from the railways but from commercial organizations, will make recommendations to the government and Parliament on a plan of uniformity of regulation of truck competition with the railways.

A hopeful sign of the year just ended was the extent to which revenue carloadings held their own against adverse factors. For the complete year the total will pass the 3,900,000 mark, about 130,000 below the 1948 figure. Transport Board officials point out there has been an important improvement in carloading efficiency, reflected during the past three years in a slow but steady rise in tons per car.

In a year-end statement, Mr. Vaughan pointed out that although the Canadian National's gross revenues were at a record high level, exceeding 1948 by about \$8 million, the line's operating surplus will be only \$19 million, the smallest figure since 1938, and after provision for interest due on securities held by the public and owing to the government, payment of taxes, equipment rents and similar charges, the year will end with an income deficit estimated at \$45 million.

"These high gross revenues demonstrate again the tremendous earning power of the Canadian National and its importance in our national economy," said the retiring president. "On the other hand, the excessive absorption of revenues by operating expenses, and the burden of fixed charges are a constant cause of worry to the management. These problems have been the subject of searching studies, and representations based on them form part of the company's brief to the Royal Commission on Transportation. They have also formed part of the railway's argument in appearances before the Board of Transport Commissioners. A scale of rates is being sought that will enable the railways to carry on the transportation services which they can perform more economically than can any other form of transport."

"The existing financial position of the company is so confused that the public cannot measure the operating efficiency of the Canadian National by the annual results," he continued. "The formulation of a national transportation policy for Canada has been entrusted to

a Royal Commission. The Canadian National has recommended to this commission that such a policy should embrace every form of transport, preserving the inherent advantage of each so that each may perform the function for which it is best adapted from the viewpoint of national cost, convenience, efficiency and necessity. The railway has urged that jurisdiction be assigned to a central regulatory body, and that uniform regulations be designed to guard against unfair competitive practices."

When the final figures for 1949 are available, they are expected to show that the Canadian National moved 77 million revenue tons of freight, approximately 10 per cent less than in 1948, but because the average haul was greater the estimated reduction measured in revenue ton-miles was 6.3 per cent. Approximately 19 million revenue passengers were carried, a decrease of one million from the previous year's total.

The postwar freight car building program of the Canadian National has improved the road's car supply position, Mr. Vaughan pointed out, and no serious or extended car shortage was experienced in 1949, though there were some minor shortages at peak periods. More than 2,900 new freight cars—gondolas, triple hoppers, auto cars, air dumps, refrigerators, tanks and box cars—were received by the C.N.R. last year, and the use of Diesel-electric motive power was extended. The road's 3,000-hp. road Diesels, the first in regular service on a Canadian railway, have performed very satisfactorily for eighteen months in freight train operation between Toronto and Montreal, he said, and tests are now being conducted with similar units in transcontinental freight service, while in December a 4,500-hp. Diesel-electric started trial runs in passenger service with the "Continental Limited" between Montreal and Winnipeg. These tests will be extended to the Maritimes and to the Pacific Coast to determine the adaptability of this type of motive power to Canadian conditions.

Newfoundland Lines Added

Express traffic was "exceptionally heavy" on the C.N.R., the total number of shipments handled exceeding those in any previous year. The volume of fruits and vegetables from British Columbia and Ontario was much greater than in 1948.

With the union of Newfoundland and Canada on April 1, 1949, Mr. Vaughan explained, the Canadian National acquired the control of the railway, steamships and dock services, telegraph and telephone facilities of the new province. "This has added some 700 miles of operated track to the company's rail lines, together with a fleet of 19 ships, and an additional 4,000 employees were transferred to Canadian National payrolls. A substantial reduction was made in freight and passenger rates on the island, and C.N.R. standards of rates of pay and working conditions were extended to the new district. The operation of the Newfoundland Railway will add approximately \$4,000,000 per annum to the deficit of the Canadian National. This line is in poor physical condition and a considerable sum of money will have to be spent on it."

During December, as noted above, the government purchased the 101-mile Temiscouata Railway, turning over its operation to the Canadian National.

In his annual review of the Canadian Pacific's year, that road's president, W. A. Mather, observed that the C.P.R. "again experienced a year of comparatively heavy traffic; tonnage handled decreased only slightly from the records established in the earlier postwar years." There were no "severe dislocations to industry such as those which beset the United States," he pointed out, and consequently, "while in some categories carloadings were down and there was a marked falling off in extremely long haul traffic which characterized the war years," there was a continuation of the increase in production and carloadings associated with Canada's industrial expansion.

"It continues to be disappointing, however," said Mr. Mather, "that with such buoyant traffic, the ratio of net earnings to gross earnings remains at the lowest level in the company's history. Faced with this situation, the Canadian Pacific has had to continue to practise the strictest economy in its operations in order to meet its immediate financial obligations. The company, however, has been able to undertake some notable improvements consistent with the ability to pay for them."

Dieselization Program

"While our equipment situation is not all that we would desire, because of inadequate financial returns and the high cost of replacements, we are embarked on an extensive program of Dieselization of our motive power which it is expected will produce substantial savings in transportation costs, although the amount necessary to purchase this new equipment represents a heavy outlay which could not be justified except in terms of those savings."

The Esquimalt & Nanaimo, on Vancouver island, is now entirely served by Diesels, and late in 1949 the Canadian Pacific completed Dieselization of the 171-mile section between Montreal and Wells River, Vt. The next big step to be taken in its Dieselization program is indicated in orders recently placed for 58 Diesel units to be assigned to 517 miles of the main line of the Schreiber division.

With completion set for 1950, work is progressing steadily on Canada's most modern freight yard, the \$9,500,000 hump retarder yard of the C.P.R. now under construction in Montreal. When completed, it will have 76 miles of track and will be the only one of its type in the country. It will be one of the first on the continent to use a new system of "push-button" switching, by which it will be possible to set all the switches necessary to move a car to a selected track merely by pushing buttons in a control tower.

"It is plain," Mr. Mather declared, "that such improvements can only continue if the Canadian Pacific is permitted revenue sufficient to play its full part in the development of the nation. In Canada's trade at home and abroad, the Canadian Pacific plays an integral part, following down through seven decades of steady and healthy development. We of the Canadian Pacific are proud of that part, and of Canada's remarkable growth. It is our hope that conditions will permit us to carry on as we have always carried on, providing the efficient, low-cost transportation without which no nation of such great distances may achieve full stature."

MEXICAN RAILWAYS on the Mend in 1949

By J. M. OROZCO ESCOBOSA
Our Mexican Correspondent



With a number of its runs already Dieselized, the long-range plan of the Mexican National calls for the purchase of 101 additional Diesel-electric locomotives

Besides the physical rehabilitation program under way on the National Railways of Mexico during 1949, important developments looking to the financial rehabilitation of this government-owned railway also took place. The regime of President Aleman has paid in full the 80 million peso* local floating debt of the National lines, which had accumulated from previous years. A comparatively slight increase in revenue net ton-kilometers, and a freight rate increase ordered by the Mexican government, reduced the net railway loss from 65,146,029 pesos in the first eight months of 1948 to 10,161,323 pesos in the same period of 1949. On the other hand, the Export-Import Bank loaned the National lines, with the guarantee of the Mexican government, the sum of \$13 million, which is being used to purchase Diesel-electric locomotives, an order for twenty 3,000-hp. "A" and "B" units having already been placed with the Electro-Motive Division of General Motors Corporation. Six of these units already have been received. The long-range plan of the National lines is to purchase 101 additional Diesel-electric locomotives. Twenty-five passenger cars were also bought recently.

There were no changes in the general staff during the year, and the resolution of the federal government in 1948 regarding matters in economic conflict, as well as the changes recommended in the structure of the lines, are finding prompt application. As a result, labor representatives are working closer with management than ever before.

Line Reconstruction and Rehabilitation

The management has begun the reconstruction of the line from Guadalajara to Manzanillo, a port on the Pacific ocean, as well as the rehabilitation of the South-eastern division, from Veracruz to Suchiate, on the Guatemalan border, using 110- and 112-lb. rail for

*The peso today is equivalent to 11.54 cents in United States currency.

Continued program of roadway and equipment rehabilitation and improved financial position with larger earnings — Management-employee relations bettered

relaying. The former narrow-gage line from Mexico City to Acambaro, via Toluca, a distance of 190 mi., has been widened throughout its length and relaid with 112-lb. rail. Diesel operation was inaugurated on this new standard-gage line in September, 1949. This is part of President Aleman's plan to standardize the gage of all railroad lines during his regime. The remaining narrow-gage lines under the jurisdiction of the National lines are from Mexico City to Puebla, and thence to Oaxaca.

Because of temporary financial stress, the employee training program of the National lines slowed down a little during the year, but General Manager Manuel R. Palacios has again stressed the need of continuing this program. As a result, plans are well under way not only to continue training the present personnel, especially in Diesel-electric locomotive maintenance and operation, but to establish the apprentice system, using text books from the Railway Educational Bureau, Omaha, Neb.

Passenger traffic volume continued to drop off during 1949 because of ever-increasing highway and air competition. However, freight traffic showed a slight increase, of 30,750,000 net ton-kilometers, during the first eight months of the year, as compared with the same period of 1948, with an increase of 64,538,345 pesos in revenue, which is attributed more to the increase in freight rates than to the increased tonnage moved. An increase of 44,012,000 gross ton-kilometers, or 0.4 per cent, was handled with 196,660 fewer freight train-kilometers, or 1.5 per cent less. Total locomotive-kilometers decreased from 31,019,857 to 30,520,142, or 1.6 per cent. Notwithstanding the increase in net ton-kilometers, there was a decrease of 4,024,713 (2.1 per cent) in loaded freight car-kilometers, which was reflected in an increase from 30.3 to 31.1, or 2.3 per cent, in net tons per car.

The selected operating statistics herewith show a much better train performance during the eight months of 1949, compared with the same period of the previous year, with the exception of train speed, which was reduced slightly from 19.7 to 19.6 kilometers per hour. This reduction in train speed was due partly to the heavier trains moved, with gross tons per train-kilometer

increased from 874 to 890. The per cent of loaded car-kilometers to the total, and car-kilometers per car daily, also fell slightly. However, the heavier train loads offset the slower speed, and produced an increase from 17,236 to 17,474 gross ton-kilometers per train-hour, or 1.4 per cent. This is an eloquent measuring stick, if and when net tons per train-kilometer increase in a greater proportion (2.4 per cent), than do the gross tons per train-kilometer (1.8 per cent), which was the result in this case.

Carload imports increased from 24,366 during the first nine months of 1948, to 26,792 in the same period of 1949, because of increases at all the boundary gateways, with the exception of Laredo, where a slight decrease was shown. The higher rate of exchange between the peso and the dollar worked against a greater increase in this traffic. On the other hand, this factor was favorable to the export traffic, which increased from 15,148 carloads in the first nine months of 1948, to 19,248 carloads during the same period of 1949.

There was an increase in the number of tons transported from 8,182,750 during the first seven months of 1948 to 8,538,475 during the same period of 1949. The fact that there was a decrease in the higher-rate agricultural products and a comparatively large increase in the lower-rate inorganic products did not permit a greater increase in freight earnings.

Earnings Up—Operating Loss Down

During the first eight months of 1949, gross railway earnings amounted to 346,647,579 pesos, compared with 281,757,982 pesos in the same period of 1948—an increase of 23.03 per cent. Freight revenues showed an increase from 195,848,842 pesos to 260,387,187 pesos, or 32.95 per cent; passenger revenues decreased from 45,421,609 pesos to 44,478,940 pesos, or 2.08 per cent; baggage earnings decreased from 156,046 pesos to 140,784 pesos, or 9.78 per cent; express earnings increased from 23,482,206 pesos to 24,845,010 pesos, or 5.80 per cent; telegraph earnings increased from 31,656 pesos to 36,095 pesos, or 14.02 per cent; and miscellaneous earnings increased from 11,428,848 pesos to 12,507,287 pesos, or 9.44 per cent. Total operating earnings increased from 276,369,185 pesos to 342,395,303 pesos, or 23.89 per cent, and other than operating earnings decreased from 5,388,797 pesos to 4,252,276 pesos, or 21.09 per cent.

Total railway expenses increased from 346,904,012 pesos to 356,808,902 pesos, or 2.86 per cent, during the first eight months of 1949, compared with the same period of 1948. During these respective periods, maintenance-of-way department expenses increased from 60,728,254 pesos to 63,092,526 pesos, or 3.89 per cent; maintenance of equipment expenses increased from 93,737,943 pesos to 94,146,906 pesos, or 0.44 per cent; traffic department expenses increased from 2,325,626 pesos to 2,368,541 pesos, or 1.85 per cent; transportation department expenses decreased from 133,876,123 pesos to 132,198,668 pesos, or 1.25 per cent; express department expenses increased from 16,913,162 pesos to 17,101,989 pesos, or 1.12 per cent; miscellaneous expenses decreased from 871,103 pesos to 781,176 pesos, or 10.32 per cent; general expenses decreased from 21,349,561 pesos to 21,113,955 pesos, or 1.10 per cent; and total operating expenses increased from 329,801,773

SELECTED OPERATING STATISTICS (First 8 months 1949-1948)

	1949	1948	Inc. or Dec.	Per cent change
Locomotive-kilms.	30,520,142	31,019,857	-499,715	-1.6
Freight train-kilms.	12,613,250	12,809,910	-196,660	-1.5
Passenger train-kilms.	7,725,478	7,851,986	-126,508	-1.6
Mixed and special kilms.	3,233,157	3,225,813	+7,344	+0.2
Non-revenue train-kilms.	158,477	201,769	-43,292	-21.5
Total train-kilms.	23,730,362	24,089,478	-359,116	-1.5
Passenger car-kilms.	66,506,941	67,162,857	-655,916	-1.0
Frt. loaded car-kilms.	187,356,376	191,381,089	-4,024,713	-2.1
Frt. empty car-kilms.	92,831,393	93,039,595	-208,202	-0.2
Total frt. car-kilms.	280,187,769	284,420,684	-4,232,915	-1.5
Net ton-kilms. (1,000's)	5,825,934	5,795,184	+30,750	+0.5
Gross ton-kilms. (1,000's)	12,592,858	12,548,846	+44,012	+0.4
Total number cars loaded	339,414	343,651	-4,237	-1.2
Net tons per train-kilom.	435	425	+10	+2.4
Gross tons per train-kilom.	890	874	+16	+1.8
Speed per hr. (kilms.) frt.	19.6	19.7	-0.1	-0.5
Gross ton-kilms. per train-hr.	17,474	17,236	+238	+1.4
Frt. locomotive-kilms. daily	175	167	+8	+4.8
Liters oil per 1,000 g.t. kilms. frt.	51.5	50.6	+0.9	+1.8
Per cent loaded car-kilms. to total	66.9	67.3	-0.4	-0.6
Car-kilms. per car daily	46.0	47.5	-1.5	-3.2
Net tons per car	31.1	30.3	+0.8	+2.6
Cars on line daily	25,075	24,528	+547	+2.2
Kilms. line operated ..	12,321	12,343	-22	-0.2

Loaded Cars Interchanged—9 months

	Imports		Exports	
	1949	1948	1949	1948
Laredo	14,951	15,254	7,640	6,770
El Paso	3,838	3,074	4,620	3,222
Eagle Pass	4,559	2,935	1,227	1,655
Brownsville	3,444	3,103	5,761	3,501
Totals	26,792	24,366	19,248	15,148

Trend of Traffic—7 months

Commodity	1949 tons	1948 tons
Forest products	348,490	321,734
Agricultural products	2,329,467	2,546,846
Animals and animal products	151,311	128,431
Inorganic products	4,807,839	4,243,954
General merchandise	901,368	941,785
Totals	8,538,475	8,182,750

pesos to 330,803,762 pesos, or 0.30 per cent. Other than operating expenses increased from 17,102,239 pesos to 26,005,140 pesos, or 52.06 per cent, because of the fact that there were a greater number of foreign cars on line.

The selected statistics herewith show an increase of 547 cars on line daily, most of which were rented cars. Another important factor in this regard was the higher rate of exchange, which was 4.85 pesos to the dollar (20.62 cents) during the early part of 1948. A continued upward trend placed the rate at 8.65 pesos per dollar (11.54 cents) in July, 1949.

The proportionately higher increase in earnings, (20.62 cents) during the early part of 1948. A consequence, however, served to reduce the loss to 10,161,323 pesos during the first eight months of 1949, compared with the loss of 65,146,029 pesos during the same period of the previous year, or a reduction of 54,984,706 pesos.

There were increases in labor and material repair costs per 1,000 kilometers run by passenger and freight cars, particularly for materials, because of the higher costs brought about by the higher rate of exchange, as most of the materials are being bought in the United States. Although locomotive maintenance costs were reduced per 1,000 kilometers run, back-shop repairs show an increase.

A REVIEW OF RAILWAY OPERATIONS IN 1949

By J. H. PARMELEE

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Railroad managements closed their books on 1949 in a hopeful spirit. They analyzed their 1949 operations with a keen, even if somewhat dejected, recognition of the unfavorable factors that plagued them in many weeks of the year. At the same time, they looked forward into 1950 with the belief that conditions will show improvement.

Industrial employment remains at high levels, foreshadowing a large distribution of take-home pay, which will supply purchasing power for many goods and services. Housing construction, represented by more than a million starts in 1949 (an all-time record), is expected to decrease only moderately in 1950. Production indexes bid fair to stay up, population is greater than ever before (now more than 150 million), and American standards of living are not likely to recede in the near future. All these domestic factors, together with economic and other commitments abroad, should spell a high degree of economic activity in 1950. Unfavorable economic or political developments in our domestic or international affairs could, of course, interfere with these prospects.

Operating results for 1949 contained a number of bright spots, although not satisfactory from the financial point of view. Freight train service was rendered with a high degree of efficiency. Railroads again broke the record for the number of ton-miles per freight train-hour, and the average trainload was probably the second greatest in history, surpassed only by the corresponding average for 1948.

Record Capital Outlay

Equipment installations were substantial, and capital expenditures for equipment and plant improvements were perhaps the largest on record. Safety of railroad operation was another field in which an excellent record was made.

These improvements, which include the rapid trend to Dieselization of motive power, give promise of even more efficient operations in the future. Much remains to be accomplished, but the \$4 billion program of capital improvements carried out by the railroads since the war shows substantial progress already made.

The year 1949 developed a number of unusual characteristics. It was the year in which a million railroad employees (the non-operating groups) shifted from a 6-day work-week of 48 hours to a 5-day week of 40 hours, with no loss in weekly pay. This radical change alone set the year apart from the average, a change the full effect of which on working conditions, employment, and operating costs has not yet been determined. The year was one of labor unrest in several industries which

normally supply large proportions of the tonnage moved by rail. It was a year in which one of the largest railroad systems suffered an extended stoppage of all train movement, because of strikes by a minority of its employees. It was a year of transportation studies, within the government and without, none of which has yet led to any substantial change in legislation, regulation, or promotional policies. Some of the studies may lead to material changes in future. Finally, looking across the water, it was the year in which the results of transport nationalization in Great Britain began to emerge, with their warning signal to the United States.

Railroads experienced a substantial decline in freight traffic during 1949—about 6.7 million cars in terms of revenue carloadings, and approximately 108 billion ton-miles, which take account of both weight and length of haul. This downward trend was due to a variety of causes, the most important being the decline in general industrial production, particularly manufacturing, and a marked reduction in the output of coal as a result of prolonged work stoppages in that industry. The October-November steel strike was also a substantial contributory factor. Other causes, which are considered later in this review, were competition and the effect of basing-point pricing developments.

The lowered level of economic activity during the year is indicated by the Federal Reserve Board index of industrial production, which for the first eleven months of 1949 was below that of the same period of 1948 by 8.6 per cent. Although regarded by many observers as a rather mild type of recession, this downward trend affected the railroad industry more seriously than it did many other industries.

It is difficult to determine the precise relationship between decreased manufacturing output and reduced freight tonnage. One of the best measures of manufacturing activity is that provided by the manufacturing index of the Federal Reserve Board, which is a component part of its general index of production. The following tabulation shows, by periods and months, manufacturing index data for 1948 and 1949, and the relative decline as between the two years.

Index of Total Manufactures (1935-1939=100)									
	1st Q.	2nd Q.	July	Aug.	Sept.	Oct.	Nov.	11 Mos.	
1948....	200.7	196.7	192	197	199	202	201	198.5	
1949....	195.7	179.7	168	177	183	175	178	182.5	
% decline	2.5	8.6	12.5	10.2	8.0	13.4	11.4	8.1	

Starting with a moderate decline in the early part of the year, the downtrend reached substantial proportions before mid-year and continued at or below that lower level during the remaining months. The index decline was reflected in decreased carloadings of "Miscellaneous" freight, a classification composed largely of manufactured products. The decrease in Miscellaneous freight carloadings for the year 1949 represented more than a third of the total decrease in carloadings in all classifications.

There is available a more definite measure of the loss in traffic which resulted from decreased production in the coal industry. Statistics compiled by the United States Bureau of Mines show that for the first 49 weeks bituminous and anthracite coal production in 1949 was 178 million tons less than in the corresponding period of 1948. The carloadings statistics of the Association of American Railroads show that during the same 49 weeks of 1949 revenue loadings were less by 2,406,050 cars than the corresponding total for 1948. Nonrevenue movement of coal, which is heavy on the railroads, is not included in this figure. Clearly, the decline in coal production during 1949 was reflected directly, and in almost its entirety, in losses of coal tonnage by rail.

The combined decreases in loadings of Miscellaneous commodities and coal aggregated 4,827,000 cars, year 1949 under 1948, or more than 71 per cent of the total carloading decrease for the year, as shown in Table 2. This supports the conclusion that conditions in the manufacturing and coal industries during 1949 were responsible for much the larger part of the downtrend in railroad freight traffic in 1949.

Later statistical tables in this review relate chiefly to operations for the first 10 or 11 months of 1949. With the usual cautionary warning that estimates for the year as a whole are apt to go awry, even when made near the close of the year, the following traffic and earnings estimates for 1949 are ventured, compared with actual results for 1948. All of the entries are in millions (000,000 omitted).

Traffic and Earnings: 1949 and 1948
(Railways of Class I)

Item	1949 (est'd)	1948 (actual)
Revenue ton-miles	530,000	637,917
Revenue passenger-miles	35,000	41,179
Total operating revenues	\$8,550	\$9,672
Total operating expenses	6,850	7,472
Tax accruals	865	1,029
Net railway operating income	675	1,002
Rate of return (%)	2.75	4.24
Net income (after charges)	400	698

Later sections of this review deal with the principal features of railroad operation in 1949. The statistics throughout are those of railroads of Class I, and for the most part are derived from reports of the Interstate Commerce Commission. Carloading statistics and certain other data are, however, based on tabulations of the Association of American Railroads. Entries for the year 1949 are necessarily estimated in part.

Traffic Trends

Table 1 shows comparative statistics of freight and passenger traffic for 1929, 1940, and each year from 1942 to 1949, the entries for 1949 being partially estimated. Freight carloadings in 1949 were lower than in any year since 1939, while ton-miles and passenger-miles were less than in any year since 1941.

Table 1—Comparative Traffic Summary

	Revenue carloadings (thousands)		
1949	36,000	1944	43,408
1948	42,736	1943	42,440
1947	44,502	1942	42,771
1946	41,341	1940	36,358
1945	41,918	1929	52,828
	Revenue ton-miles (millions)		
1949	530,000	1944	737,246
1948	637,917	1943	727,075
1947	654,728	1942	637,984
1946	591,982	1940	373,253
1945	681,001	1929	447,322
	Revenue passenger-miles (millions)		
1949	35,000	1944	95,549
1948	41,179	1943	87,820
1947	45,921	1942	53,659
1946	64,673	1940	23,762
1945	91,717	1929	31,074

Revenue carloadings. Loadings of revenue freight in 1949 approximated 36 million cars, a decrease of more than 6½ million under 1948, or 15.8 per cent.

Loadings for each of the eight commodity groups in 1949 are shown in Table 2, together with the increase (I) or decrease compared with 1948. Seven of the eight commodity groups decreased in 1949, grain being the only group to show an increase (5.2 per cent) over 1948. Of the other seven groups, livestock and miscellaneous showed the smallest rates of decrease, and coal and coke the greatest relative decreases.

Table 2—Carloadings by Commodity Groups

	1949 (000)	Decrease under 1948 Number (000)	Per cent
Grain	2,595	1 128	5.2
Livestock	555	74	11.8
Miscellaneous	17,265	2,383	12.1
I. C. L.	4,600	846	15.5
Forest Products	1,950	397	16.9
Ore	2,210	568	20.5
Coke	585	152	20.6
Coal	6,240	2,444	28.1
Total	36,000	6,736	15.8
I—Increase			

Revenue ton-miles. The decrease of more than 100 billion ton-miles in 1949, below 1948, represented the greatest reduction in history for a single year. Twice before, in 1941 and again in the war year 1942, ton-miles increased by 100 billion or more over the preceding year, but prior to 1949 the largest decrease in a single year had occurred in 1946, when the loss was 89 billion. The 530 billion ton-miles of freight service performed in 1949 was less than in any of the preceding seven years, but was greater than in any year prior to 1942.

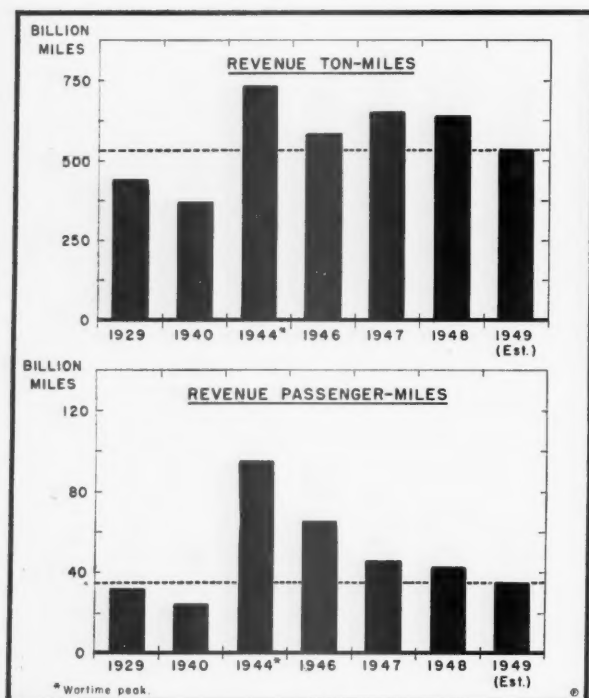
This last point is worth emphasizing. Freight traffic volume in 1949, although disappointing in comparison with 1947 and 1948, was on a higher level than in any year prior to 1942. It exceeded the 1940 level by 42.0 per cent, and was 18.5 per cent above the prewar peak attained in 1929.

Passenger-miles. The postwar decrease in passenger traffic continued throughout 1949, total passenger-miles for the year being 35 billion, 15 per cent below 1948. However, the downward trend has been leveling off, the average annual decrease for the first two postwar years (1946 and 1947) being 22.9 billion passenger-miles, and for the next two years (1948 and 1949) 5.5 billion.

As in the case of freight traffic, railroad passenger traffic in 1949 was much above prewar levels. The volume exceeded that of 1940 by 47.3 per cent, and was greater than in 1929 by 12.6 per cent.

Chart A shows the volume of freight and passenger traffic, in graphic form, for 1929, 1940, 1944, and each

CHART A
TRAFFIC
RAILWAYS OF CLASS I
SELECTED YEARS



of the 4 postwar years 1946 to 1949. That the traffic levels of 1949 were considerably above those of both 1929 and 1940 is clearly indicated on each of the two graphs comprising the chart.

Financial Results of Operation

Railroad revenues, expenses and net earnings all decreased in 1949. Both actually and relatively, the decrease in revenues was greater than the reduction in expenses, with the result that net earnings declined sharply.

The four tables that follow show significant income account items for the first 10 months of 1949, with comparative statistics for the corresponding periods of 1948 and 1947. Table 3 is the condensed income account.

Table 3—Condensed Income Account

	1949	First 10 months 1948	1947
	(millions)	(millions)	(millions)
Total operating revenues	\$7,157	\$8,040	\$7,126
Total operating expenses	5,774	6,185	5,572
Operating ratio (per cent)	80.68	76.94	78.19
Taxes	701	857	777
Net railway operating income	542	854	637
Rate earned ^a (per cent)	2.92	4.24	3.41
Net income, after charges	303	590	370

^aRates shown are for 12-month periods, ending October 31, 1949, and December 31, 1948 and 1947, respectively.

Operating revenues for the first 10 months of 1949 decreased 11.0 per cent below the same period of 1948. This was due to decreases for that 10-month period of more than 17 per cent in ton-miles and about 14 per cent in passenger-miles, offset only moderately by higher rates and fares.

Operating expenses were reduced 6.6 per cent. A number of factors influenced the trend of operating expenses in 1949, some in one direction and some in the other. These included higher wage rates, the 40-hour week for non-operating employees effective September 1, the lesser volume of traffic handled, moderate reductions in unit prices of fuel, materials and supplies, and greater operating efficiency. In dollars, the decrease in revenues was more than twice as great as the reduction in expenses. This led to a higher operating ratio in the 1949 period—80.7 per cent, compared with 76.9 per cent in the 1948 period.

Taxes accrued in the first 10 months of 1949 decreased 18.1 per cent. By kinds of taxes, federal income taxes decreased \$151 million (reflecting reduced net earnings), and accounted for much the greater part of the decrease of \$156 million in the tax total. Although the payroll tax rate for retirement purposes was increased 0.25 per cent (from 5.75 to 6.00 per cent) on January 1, 1949, that increase was (at least temporarily) more than offset by reductions in rail employment, resulting in a slight reduction in payroll tax accruals.

Net railway operating income for the 10 months decreased 36.6 per cent. The sum of the reductions in operating expenses, in taxes, and in net rentals failed to equal the decrease in operating revenues for the 10-month period by \$312 million. Net income for the first 10 months of 1949 was \$303 million, 48.6 per cent below that of the corresponding period of 1948.

For the 12-month period ended October 31, 1949, the rate of return earned on net property investment (after depreciation) was 2.92 per cent, compared with 4.24 per cent for the calendar year 1948 and 3.41 per cent for the calendar year 1947.

Table 4 shows the five general operating revenue accounts for the first 10 months of the years 1947-8-9.

Table 4—Operating Revenues

	1949	First 10 months 1948	1947
	(millions)	(millions)	(millions)
Freight	\$5,880	\$6,637	\$5,789
Passenger	722	799	800
Mail	180	158	115
Express	63	100	92
All other	312	346	330
TOTAL	\$7,157	\$8,040	\$7,126

Mail was the only general revenue account that increased in 1949. Due to the greater volume of mail handled in the first 10 months, mail revenue increased 14.1 per cent. Freight revenue decreased 11.4 per cent; passenger revenue decreased 9.7 per cent; express revenue dropped 36.5 per cent; all other revenues were off 9.7 per cent.

The express revenue shown in the railway income account represents so-called express privilege payments received from the Railway Express Agency, being what is left in the accounts of that agency after paying its own expenses and taxes. Gross operating revenues of the agency itself for the first 9 months of 1949 amounted to \$247.5 million, a decrease of 21.4 per cent below the same period of 1948.

Table 5 summarizes railroad operating expenses, by general accounts, for the several 10-month periods.

With the exception of traffic expenses, each of the principal expense accounts in the 1949 period was less than in the 1948 period. Maintenance of way expenses in 1949 declined 2.9 per cent; maintenance of equip-

Table 5—Operating Expenses

	1949 (millions)	First 10 months 1948 (millions)	1947 (millions)
Maintenance of way and structures	\$1,094	\$1,126	\$1,008
Maintenance of equipment	1,341	1,404	1,285
Traffic	162	160	145
Transportation	2,850	3,161	2,826
General and other	327	334	308
TOTAL	\$5,774	\$6,185	\$5,572

ment expenses were off 4.5 per cent; transportation expenses decreased 9.8 per cent; general and all other expenses were reduced by 2.1 per cent.

Comparing 1949 with 1947, all the expense accounts showed increases. Bearing in mind that ton-miles in the first 10 months of 1949 were less than in the corresponding period of 1947 by 18.7 per cent, and passenger-miles were 23.0 per cent less, it is a significant commentary on increased wage and price levels that operating expenses in the 1949 period were greater by \$202 million, or 3.6 per cent, than in 1947, two years earlier, when much greater traffic levels were being experienced.

Table 6, the final table in the income series, shows the rate of return earned on net property investment. The rate is shown for 1929, and for each year from 1940 to 1949. Entries for 1949 are for the 12-month period ended October 31, 1949.

Table 6—Rate of Return on Net Property Investment

	Net railway operating income (millions)	Rate of return— per cent on investment after depreciation
1949*	\$ 690	2.92
1948	1,002	4.24
1947	781	3.41
1946	620	2.75
1945	852	3.77
1944	1,106	4.73
1943	1,360	5.75
1942	1,485	6.34
1941	998	4.28
1940	682	2.94
1929	1,252	5.24

*12 months ended October 31, 1949. For the calendar year 1949, estimates indicate a net railway operating income of \$650 million which would represent a rate of return of 2.75 per cent.

With the exception of the year 1946, a year of post-war transition, the rate of return for the 12-month period ended October 31, 1949, was lower than in any year included in the table. When final figures for the year 1949 become available, the return will be little if any greater than that for 1946.

Employment and Wages

Railroad employment in 1949 averaged 1,191,000. This was a reduction of 136,000 under 1948, and was the smallest average since 1941.

Table 7 shows for 1949, and for each of the preceding nine years, the average number of railroad employees, total payroll, annual earnings per employee, and straight-time rate of pay per hour.

Table 7—Employees and Their Compensation

Year	Average number	Total payroll (millions)	Average annual earnings of employees (cents)	Average straight time rate per hour (cents)
1949 (Est.)	1,191,000	\$4,361	\$3,660	142.6
1948	1,326,906	4,769	3,594	131.3
1947	1,351,863	4,352	3,219	117.5
1946	1,359,263	4,171	3,068	111.7
1945	1,419,505	3,862	2,721	93.3
1944	1,414,776	3,858	2,727	93.0
1943	1,355,114	3,521	2,598	89.3
1942	1,270,687	2,932	2,307	83.5
1941	1,139,925	2,332	2,045	76.9
1940	1,026,848	1,964	1,913	74.2

The railroad payroll for 1949 approximated \$4,361 million, compared with \$4,769 million for 1948. Compared with 1945, however, the 1949 payroll showed an increase of \$499 million, although the number of employees was less than in 1945 by 229,000.

Straight-time rate of pay of railroad employees averaged 74.2 cents per hour in 1940, 131.3 cents per hour in 1948, and 142.6 cents per hour in 1949. The rate of pay at the end of 1949 was 157 cents per hour, reflecting the increased wage rate for non-operating employees resulting from establishment of the 5-day week for those employees on September 1.

Annual earnings of railroad employees averaged \$1,913 per man in 1940, increased to \$3,594 in 1948 and reached a new high of \$3,660 in 1949.

At the beginning of 1949, railroads and representatives of the non-operating group of employees had before them recommendations of an emergency board which involved a so-called third round wage increase and a 5-day (40-hour) work-week for non-operating employees. An agreement was executed by the parties on March 19, 1949, putting into effect the recommendations of the board, a 7-cent wage increase per hour effective from October 1, 1948, and establishment of a work-week of 40 hours from September 1, 1949. Rates of pay in effect prior to October 1, 1948, were increased by 20 per cent, so that employees would have the same basic earnings for 40 hours that they were then earning for 48 hours of work. This meant an average hourly increase of 23½ cents to non-operating employees, to which was added the 7-cent increase of October 1, 1948.

The railroads had before them, at the beginning of 1949, a notice dated November 18, 1948, served by the Order of Railway Conductors and Brotherhood of Railroad Trainmen, and a notice dated November 30, 1948, served by the Brotherhood of Locomotive Engineers, Brotherhood of Locomotive Firemen and Enginemen, and Switchmen's Union of North America, for vacation changes. An agreement was reached in April, 1949, effective July 1, 1949, granting to railroad operating employees an annual vacation of two weeks with pay after five years of service. These employees were already receiving one week after one year of service.

At the beginning of 1949, the railroads had before them also a proposal from the Brotherhood of Locomotive Engineers for employment of an additional engineer on Diesel-electric locomotives used in road service, and a proposal from the Brotherhood of Locomotive Firemen and Enginemen for assignment of an additional fireman (helper) on multiple-unit road Diesel-electric locomotives. The proposal of the firemen contained other demands, but employment of a second fireman was the important issue. These requests were heard by two Presidential emergency boards, which recommended against employment of a second or additional engineer or fireman on road Diesel-electric locomotives. The same men served on both boards.

On March 15, 1949, the Order of Railway Conductors and the Brotherhood of Railroad Trainmen sought to amend their existing agreements to provide for a 5-day (40-hour) work-week, without reduction in weekly pay, for yard operating employees represented by those organizations. They also requested time and one-half pay for Sunday and holiday work and changes in pay schedules and working rules for road conductors and

trainmen. Those demands ran through the usual conference procedure, and at the end of the year the dispute had reached the National Mediation Board.

On September 20, 1949, the Switchmen's Union of North America requested for the workers it represents a 5-day (40-hour) work-week with no loss in weekly pay, and double time for Sunday and holiday work. On November 1, 1949, the Brotherhood of Locomotive Firemen and Enginemen requested for firemen (helpers) engaged in yard, transfer, belt line, hostler and hostler helper service a 5-day (40-hour) work-week for which the employee shall receive the equivalent of 48 straight time hours of pay, with time and one half for holiday work.

Material Prices

Railroad material prices reached a peak on October 1, 1948, after a consistent rise since 1939. The trend during the first half of 1949 was downward, with a stiffening tendency after July 1. Table 8 shows price indexes for various dates from December, 1939, to October 1, 1949.

Table 8—Railway Material Price Index
(May, 1933=100)

	Material and supplies (other than fuel)	Fuel (coal & oil)	All material
December, 1939	130.7	134.3	131.9
December, 1941	146.4	148.4	147.0
December, 1943	159.5	180.5	166.2
December, 1945	170.0	195.9	178.2
December, 1947	228.4	295.4	249.8
Oct. 1, 1948 (high)	264.1	335.3	287.5
December, 1948	262.0	318.7	280.0
July 1, 1949	243.9	290.4	258.9
October 1, 1949	244.7	284.5	257.8

Comparing prices on October 1, 1949, with the all-time high reached one year earlier, the price index for material and supplies other than fuel declined 7.3 per cent, the fuel index decreased 15.2 per cent, and the composite index for material showed a decrease of 10.3 per cent. Prices of material other than fuel rose slightly in the third quarter of 1949, but fuel prices continued moderately downward. New labor contracts in the coal fields, if and when signed, may reverse this last trend.

Prices are still at extremely high levels. The 10-year rise from 1939 to 1949 (October 1) was 87.2 per cent for material other than fuel, 111.8 per cent for fuel, and 95.5 per cent for all material. Postwar increases, since December, 1945, have also been substantial, averaging about 45 per cent.

Rates and Fares

Freight rates. Both the interim and final increases authorized by the Interstate Commerce Commission in Ex Parte No. 168 (carriers' petition of October 12, 1948) became effective during 1949. The interim increase of 5.2 per cent authorized in the commission's report of December 29, 1948, was put into effect on January 11, 1949.

Further hearings were held in Washington, Chicago, Montgomery, San Francisco, Salt Lake City, and Oklahoma City, beginning in March, 1949. After final hearing and argument in Washington, the case was submitted on May 21.

The commission's final report in Ex Parte No. 168 was

dated August 2, 1949. The interim increases authorized in the report of December 29, 1948, were superseded by the final report, which by unanimous decision of the commission authorized the following increases in freight rates in effect prior to the interim increases:

Within and between Eastern and Southern territories	10 per cent
Within Zone 1 of Western trunk-line territory, and interterritorially other than between Eastern and Southern territories	9 per cent
Within Western territory (other than Zone 1)	8 per cent
Maximum increases permitted on:	
Fresh fruits, vegetables and melons	9 cents per 100 lbs.
Sugar and lumber	6 cents per 100 lbs.
Coal, coke and iron ore	35 cents per ton
Lignite	18 cents per ton
No increases authorized on:	
Protective services	
Iron ore moving to the head of the Lakes	

These final increases, effective September 1, 1949, averaged about 3.7 per cent above the interim rates and about 9.1 per cent above rates in effect prior to the interim increase. The latter percentage compares with an average increase of approximately 13 per cent sought in the carriers' petition in the case. In this connection, it may be pointed out that the petition of October 12, 1948, was filed more than two months before the President's emergency board recommended a 40-hour week (with 48 hours' pay) for non-operating employees. At the final hearing in May, the railroads introduced estimates of the cost of the 40-hour week. However, they did not amend their petition to cover that cost.

The commission on November 21 granted a further postponement to January 31, 1950, of its order in Docket No. 26712, requiring railroads to join with water carriers in publishing certain specified joint rail-barge rates. A suit had been filed by 27 railroads on September 20 in the federal District court for the Northern District of Illinois, to enjoin and set aside the commission's order.

The commission on November 28 reopened Docket No. 28300 (Class Rate Investigation, 1939) for further hearings. The scope and purpose of the reopened proceedings are: (1) To revise the basic scale of class rates set forth in Appendix 10 to the original report (262 I.C.C. 447), to conform with the uniform freight classification now in preparation in Docket No. 28310; and (2) to determine what, if any, arbitraries should be added to the basic scale of class rates for the benefit of so-called short-line and weak railroads. The order, later amended, set February 28, 1950, as the date for submission of written statements, rebuttal evidence to be due within 30 days of the filing of the original evidence.

Also on November 28, the commission instituted an inquiry into class rates in Mountain-Pacific territory (Docket No. 30416). No date was set for hearings.

Passenger fares. On June 3, 1949, Eastern railroads filed a petition with the Interstate Commerce Commission for authority to increase basic passenger fares by 12½ per cent. After hearings, the commission (by a vote of 6 to 4) authorized the increases in a report dated November 8, 1949. They became effective on or about December 1.

Mail pay. No hearings were held by the commission

during the year on the pending mail pay case. Thus matters have been more or less at a standstill for more than two years. On March 24, 1949, the railroads filed a second supplemental petition raising the permanent increase sought in mail pay rates from 65 per cent (petition of June 24, 1948) to 80 per cent. Both percentages apply to rates in effect prior to the 25 per cent interim increase effective February 19, 1947. On March 31, 1949, the railroads filed a petition seeking a second interim increase of 35 per cent (in addition to the first interim increase of 25 per cent), pending such time as the Post Office Department is ready to proceed with the main case.

The joint study of railroad mail-carrying costs undertaken by the railroads and the Post Office Department in the fall of 1948 was nearing completion at the end of 1949. This time-consuming and expensive study, in which all Class I mail-carrying railroads are participating, relates to the respective costs of head-end and passenger-carrying services.

Express rates. The Railway Express Agency filed a petition with the commission on June 29, 1949, for authority to increase first class rates and charges by 10 per cent, second class rates and charges to be 75 per cent of first class, with a revised and graduated scale of package charges. Hearings were held in Washington beginning September 7th, but the commission has not yet handed down its decision.

The single scale of first class express rates for nationwide application was put into effect on February 14, 1949, as authorized by the commission's order dated December 29, 1948. The new scale was that previously in effect in Western territory, which was slightly higher than in Eastern and Southern territories. This brought express rates to about 60 per cent above prewar levels.

Summary. Increases in railroad rates and fares from 1939 to the end of 1949 approximated 57 per cent in the case of freight rates, 34 per cent in the case of basic passenger fares, and 25 per cent in the case of mail pay rates. These are the authorized increases, and make no allowance for the fact that some states have not authorized, or have only partially authorized, corresponding increases in rates and fares applicable to intrastate movements. Nor does it allow for the fact that downward adjustments have been and are constantly being made to preserve relationships, to meet competitive situations, etc.

Average Revenue Per Traffic Unit

Revenue per ton-mile averaged 1.332 cents during the first nine months of 1949, and revenue per passenger-mile averaged 2.435 cents. Table 9 shows the averages for 1929, 1939, each year from 1941 to 1948, and the first nine months of 1949. The 1949 ton-mile average

Year	Per ton-mile (cents)	Per passenger-mile (cents)
1949 (9 mos.)	1.332	2.435
1948	1.251	2.341
1947	1.076	2.097
1946	.978	1.947
1945	.959	1.871
1944	.949	1.874
1943	.933	1.882
1942	.932	1.916
1941	.935	1.753
1939	.973	1.839
1929	1.076	2.808

reflects for only one month (September) the increase of 3.7 per cent in freight rates authorized by the commission in its final decision in Ex Parte No. 168.

Average revenue per ton-mile was higher in 1949 than in any previous year, exceeding the 1921 high of 1.275 cents by 4.5 per cent. The increase of 37 per cent from 1939 to 1949 is much less than the average increase of about 100 per cent experienced by the railroads since 1939 in wage rates and material prices.

Average revenue per passenger-mile, while higher than in any year back to and including 1932, was lower than in any year from 1919 to 1931, inclusive. The increase of 12.5 per cent in basic fares granted Eastern railroads, and put in effect on or about December 1, 1949, is not reflected in the 9-month average.

Commission Activities

Government Reparation Cases. The Interstate Commerce Commission on June 21, 1949, opened hearings on five of a series of 17 complaints filed by the Department of Justice, seeking to recover alleged overcharges which it claims the railroads made on certain government shipments of commodities during the second world war, estimated by the department to aggregate between two and three billion dollars. The department completed presentation of its testimony on June 23, and the railroads presented their testimony at a hearing beginning November 28. Rebuttal evidence will be submitted by the department on February 20, 1950, and by the railroads one month later, on March 20.

Applications under Reed-Bulwinkle Act. The Reed-Bulwinkle Act (Section 5a of the Interstate Commerce Act) was enacted June 17, 1948. It affords relief from the operation of antitrust laws with respect to the making and carrying out of agreements between carriers relating to rates, fares, classifications, divisions, allowances, or charges, or procedures for joint consideration thereof, provided the agreements are approved by the Interstate Commerce Commission as in conformity with the requirements of the statute and the commission finds that the relief should be afforded by reason of furtherance of the national transportation policy. In all, fourteen applications for approval of agreements have been filed, six by railroads, six by motor carriers, and two by water carriers. The railroad applications are the following: No. 2, Western Traffic Association Agreement; No. 3, Eastern Railroads Agreements; No. 6, Southern Freight Association, et al. Agreements; No. 7, Association of American Railroads, Per Diem, Mileage, Demurrage and Storage Agreement; No. 13, North Atlantic Ports Railroads, Tidewater (Demurrage) Agreement; and No. 14, Lake Coal Demurrage Committee Agreement. By report and order made and entered October 3, 1949, the commission approved the Western Traffic Association Agreement, subject to minor modifications, and as modified it became effective December 15, 1949. This agreement governs the procedures of rate conferences in Western territory. None of the other rail applications has been acted upon, but hearings have been completed with respect to the Eastern (No. 3) rate conference agreement and the No. 7 proceeding, which is an application by 581 railroads for approval of an agreement relating to procedures for establishment and modification of railroad per diem,

mileage, and demurrage and storage rates and charges, and rules and regulations pertaining thereto.

Per Diem Rate Developments. The commission issued a report on July 14, 1949, dismissing complaints attacking the then existing per diem charges (\$1.50 per day) for the use of freight cars when on the lines of rail carriers other than their owners. Two complaints were involved: Docket No. 29587 in which a group of short-line railroads and others alleged that the per diem rate in effect was too high, and Docket 29751, in which six western railroads alleged that the rate was too low.

The per diem rate of \$1.50, in effect from September 1, 1947, was increased by vote of the railroads to \$1.75 on November 1, 1949.

Air Brake Installation. The commission on October 13, 1949, granted a further extension of time in which to install AB air brakes on freight cars used in interchange service. Under previous orders, cars used in interchange freight service were to have been equipped with such brakes by December 31, 1949. The new order provides that where the number of unequipped cars is 2,000 or less, all shall be equipped, or withdrawn from interchange service, on or before December 31, 1950. Where the number is more than 2,000, one-half shall be equipped or withdrawn on or before December 31, 1950, and the remainder on or before December 31, 1951.

Pullman Uniform Service Contract. A report by the commission on August 30, Docket No. 29592, approved a new uniform service contract made by the Pullman Company and the railroads. It will remain in effect until terminated on six-month notice at any time after July 1, 1950, by either party. The contract modifies certain features of the former agreement pertaining to allocation of Pullman operating expenses.

Reduction in Radio Frequencies. The Federal Communications Commission in a report of May 3, 1949, reduced the number of frequencies available to the railroads. It transferred the Railroad Radio Service to a new Land Transportation Radio Service, comprising taxicab, railroad, intercity bus, highway truck, urban transit, and automobile emergency radio services. Of the 47 frequencies provided for these services in the 152-162 Mc. band, 41 were allotted to the Railroad Radio Service in Chicago for the 32 roads operating in and out of that city, and 39 were allotted for railroad use in areas outside of Chicago. This is a reduction of 19 and 21 frequencies, respectively, from the 60 previously granted to railroads.

Legislation

The first session of the 81st Congress opened on January 3, 1949, and ended on October 19. The second session convened on January 3, 1950. All bills and resolutions on which final action was not taken during the first session retain their status in the second session.

Although numerous measures of interest to railroads were considered during the first session, most of them were left as unfinished business. However, some bills indirectly affecting or of interest to railroads were enacted. These include the following laws.

Amendments to Interstate Commerce Act (Public Law 197). This legislation, approved August 2, was embodied in S.256, a bill containing several non-con-

troversial amendments to the Interstate Commerce Act, recommended by the Interstate Commerce Commission. One amendment gives the commission authority to require reports from carrier associations, and to inspect the records of such associations. A second amendment empowers the commission to prescribe rules covering the extension of credit by express companies. Other amendments (1) eliminate the requirement that a public hearing be held in all merger and acquisition proceedings where railroads are involved; (2) extend the provisions relating to issuance of securities and consolidations, to apply to sleeping car companies; (3) exempt from the consolidation provisions street or interurban railways not part of a general steam railway system; and (4) relieve railroads from filing with the commission copies of contracts relating to traffic where such filing, in the commission's opinion, is not necessary in the public interest.

Limitations of Actions for Undercharges and Overcharges (Public Law 138). Originating in the Senate as S.257, this act makes uniform as to all types of carriers subject to the Interstate Commerce Act the two-year time limit within which court actions may be brought by or against carriers for recovery of undercharges or overcharges. Already applicable to railroads, the new law extends similar coverage to motor carriers, water carriers, and freight forwarders. Approved June 29.

Minimum Wages

Amendment of Fair Labor Standards Act of 1938 (Public Law 393). Numerous bills were introduced to amend the Fair Labor Standards Act. Separate measures were passed by the House on August 11, and by the Senate on August 31. Following conference, the measure was reported as H.R.5856, passed by both legislative bodies, approved on October 26, and becomes effective in January, 1950. The act raises the statutory minimum wage from 40 cents per hour to 75 cents. The minimum wage rate now generally effective on railways of Class I is \$1.16 per hour.

Revenue Code Provisions Extended (Public Law 271). Certain provisions of H.R.5086, approved August 27, extended for one year (until December 31, 1950) Sections 22(b)(9) and 22(b)(10) of the Internal Revenue Code. Section 22(b)(9) excludes from taxable income a capital gain attributable to the discharge of corporate indebtedness through acquisition of bonds at less than par, and Section 22(b)(10) excludes a so-called capital gain resulting from the discharge of indebtedness in the process of reorganization.

Reorganization of Government Agencies (Public Law 109). This legislation is of general interest to railroads, because of its possible effect on the organization and functions of governmental agencies dealing with transportation matters. Known as the Reorganization Act of 1949, it authorizes the President to reorganize agencies of the government. Under the act, either the Senate or the House of Representatives may disapprove any such proposal by the President, but must act within 60 days. In framing reorganization plans, the President is expected to be guided to a considerable degree by recommendations made by the Commission on Organization of the Executive Branch of the Govern-

ment, the so-called Hoover Commission. Some of the recommendations of the Hoover Commission which pertain to transportation matters are considered in another section of this review.

Legislation Not Enacted

Basing-Point Bills (S.1008 and others). Decisions of the United States Supreme Court in the so-called Cement Institute Case (333 U. S. 683), and in several other cases (such as the rigid steel conduit case, decided April 25, 1949) bearing upon various aspects of sales competition, were considered by many as tending to outlaw sales at delivered prices, with absorption by the seller of freight charges, including use of a basing point for such charges. A number of measures were introduced in 1949, designed to clarify the legal status of freight absorption and basing-point pricing. One measure eventually received approval, with some differences in content, by both House and Senate. This bill, S.1008, with certain changes, was passed by the Senate on June 1, and by the House, with further amendments, on July 7. The conference committee on the bill reported October 13. The House agreed to the conference report on October 14, but the Senate on October 18 deferred further consideration until January 20, 1950.

As the measure now stands, it amends section 5 (a) of the Federal Trade Commission Act, and sections 2 (a) and 2 (b) of the Clayton Act. The amendment to the Federal Trade Act, as passed by both House and Senate, provides that:

It shall not be an unfair method of competition or an unfair or deceptive act or practice for a seller, acting independently, to quote or sell at delivered prices or to absorb freight: Provided, That this shall not make lawful any combination, conspiracy, or collusive agreement; or any monopolistic, oppressive, deceptive, or fraudulent practice, carried out by or involving the use of delivered prices or freight absorption.

The general purpose of the proposed amendments to the Clayton Act is to limit the foregoing remedial provision to cases where the effect of freight absorption on competition would not be that prohibited by the Clayton Act. These Clayton Act amendments are generally regarded as largely negating the relief intended by the proposed amendment to the Federal Trade Commission Act.

St. Lawrence Waterway (S. J. Res. 99; H. J. Res. 271). A resolution (S. J. Res. 99) was introduced on June 1, 1949, by Senator Lucas of Illinois and 18 other senators, to approve the United States-Canada agreement for development of the St. Lawrence waterway project. The resolution includes provisions for charging tolls for the purpose of making the proposed waterway self-liquidating. It is anticipated that a subcommittee of the Senate foreign relations committee, headed by Senator Tydings of Maryland, will conduct hearings on the resolution in the second session. A similar resolution (H.J. Res. 271), introduced by Representative Dingell of Michigan on June 7, was referred to the House committee on public works.

On March 8, 1949, the Federal Power Commission announced that it had postponed action on an application filed with it in July 1948, by the New York Power Authority, for a license to construct and operate (jointly with the Power Commission of Ontario, Canada) a

hydroelectric power development in the International Rapids section of the St. Lawrence river. On December 20, the presiding examiner of the commission ordered that the application be denied, and directed that the findings be submitted to Congress. The examiner's order is subject to approval by the full commission.

Communications-Rules Bills (S.238; H.R.378). In its annual report for 1946, the Interstate Commerce Commission recommended that section 25 of the Interstate Commerce Act (which includes provisions of the so-called Signal Inspection Act), be amended so as "to authorize the commission to require any carrier subject to that section to install and maintain telegraph, telephone, radio, inductive or other wayside or train communication systems intended to promote safety of railroad operation, and to establish and maintain rules, regulations, and practices with respect to operation of trains intended to promote safety of railroad operation."

Identical bills, intended to carry out the commission's recommendation, were introduced in 1949: H.R.378 on January 3, and S.238 on January 5. Extended hearings were held on both measures. Railroad representatives, appearing in opposition to the bills, emphasized their unprecedented character in extending governmental control to phases of actual physical operation, and pointed out the breadth of language used and uncertainties as to its meaning. The House committee on interstate and foreign commerce, on August 11, ordered H.R.378 reported to the House with qualifying amendments. Action by the Senate on S.238 was confined to hearings held by its committee on interstate and foreign commerce.

Recapitalization of Inland Waterways Corporation (S.211, H.R.4978). Bills introduced in 1949 sought to insure continued operation of the Federal Barge Lines through government purchase of \$18 million additional capital stock of the Inland Waterways Corporation. The principal bills receiving consideration were H.R.4978, introduced on June 2, and S.211, introduced on January 5. Hearings were held on those measures before the interstate and foreign commerce committees of both House and Senate. No committee report was filed with respect to H.R.4978, but on October 15, S.211 was favorably reported to the Senate with an amendment reducing the additional authorization of capital stock from \$18 million to \$7 million. The Senate took no action on the bill. Congress, however, in an appropriation bill (Public Law 266), approved on August 24, appropriated \$1,000,000 for the Inland Waterways Corporation, this being the amount remaining from the \$15,000,000 of capital stock previously authorized.

Postal Rates (S.1103, H.R.2945). Two bills dealing with proposed increases in parcel post rates, and reduction in the size and weight limits of parcel post packages, were subjected to hearings in 1949 before House and Senate committees. S.1103, introduced February 28, was referred to the Senate committee on post office and civil service, which reported the measure with amendments on September 30. H.R.2945, introduced February 22, was referred to the House committee on post office and civil service, which reported an amended bill on October 17. Both bills provide for limited increases in postal rates, and for reductions in weight and dimensions of parcel post packages.

Other Proposed Legislation. A number of other bills

introduced in 1949 related to matters of direct or indirect interest to railroads. Several measures were designed to repeal or modify section 5a of the Interstate Commerce Act (the Reed-Bulwinkle Act). None received active consideration. The question was, however, raised in the course of hearings on the so-called Study of Monopoly Power, now being conducted pursuant to H. Res. 137.

Numerous bills were introduced proposing amendments to the Railroad Retirement Act, generally for the purpose of a substantial liberalization of benefits. No action was taken on any of them.

Court Actions

Railroad Anti-Trust Suit. This suit was instituted on August 23, 1944, by the Department of Justice against the Association of American Railroads, Western Association of Railway Executives, and certain railroads and individuals. In considering an application of defendants to extend the time within which they might file additional objections to the government's testimony, as well as supplemental pleadings, Judge John W. Delehant entered an order on May 2, 1949, setting such time at a date 45 days after entry of final orders by the Interstate Commerce Commission with respect to Applications Nos. 2 and 7, or until further order of the court. Those applications were filed with the commission under provisions of the Reed-Bulwinkle Act. Application No. 2 (Western Traffic Association) was approved by the commission, with minor modifications, on October 3. Application No. 7 (Association of American Railroads) was under consideration by the commission at the end of the year.

Georgia Anti-Trust Case (State of Georgia v. Pennsylvania Railroad Company, et al). Evidence in this case was heard in 1946 by a special master appointed by the United States Supreme Court. The case has been under consideration by him since May 30, 1947.

Legality of Strike Injunction. The United States Court of Appeals for the District of Columbia refused, on April 25, 1949, to rule on the legality of the injunction that blocked the May, 1948, strike of the engineers, firemen, and switchmen, and declared that the question had become "moot." On November 7, the United States Supreme Court, to which the case was appealed, issued an order denying the unions' petition for a review of the ruling of the court of appeals. The Supreme Court had previously refused to consider the unions' case when they presented the matter to the court in an unsuccessful attempt to by-pass the court of appeals.

State Taxation of Water Carriers. In a decision rendered in February, 1949, the Supreme Court ruled that states within which interstate carriers on inland waterways conduct operations may levy properly apportioned and nondiscriminatory taxes on the barges or other property and activities of such carriers. The case involved a contest by certain barge line companies of taxes levied by the state of Louisiana.

Several studies and investigations pertaining to transportation were initiated or continued during 1949. Near the close of 1948, the House committee on interstate and foreign commerce reported progress in its National Transportation Inquiry, authorized under the provisions of H. Res. 318, adopted March 7, 1946. The re-

port recommended that the 81st Congress authorize the committee to continue its investigation. No action was taken by Congress, and the inquiry remained more or less dormant during 1949.

Recommendations of Hoover Commission. The commission on Organization of the executive Branch of the Government, generally known as the Hoover Commission, was created under provisions of a law enacted by the 80th Congress (Public Law 162) approved July 7, 1947. Congress directed the commission to study and investigate the organization and methods of operation of executive agencies for the purpose of developing recommendations which would promote economy, efficiency, and improved service. The commission submitted to Congress a series of 19 reports, the last one on May 20, 1949. Certain of the recommendations proposed significant changes in the organization and distribution of governmental functions dealing with or affecting transportation. Some of the more important changes proposed are summarized as follows:

Concentration in the Department of Commerce of the government's nonregulatory transportation activities. This would involve transfer to that department of certain functions of the Interstate Commerce Commission, including formulation of consolidation plans; railroad car service, and safety; motor carrier safety. Also to be transferred would be executive functions of the Maritime Commission related to construction, operation, charter, and sale of ships; certain functions of the National Advisory Committee for Aeronautics; and responsibility for promulgating air safety regulations.

Regulatory responsibilities of the Interstate Commerce Commission, Maritime Commission, and Civil Aeronautics Board to be retained by those agencies.

Transfer of Public Roads Administration from the Federal Works Agency to the Department of Commerce. (This change has been consummated.)

Transfer of flood control and rivers and harbors improvement from the Army's Corps of Engineers to the Department of the Interior, there to be combined with the Reclamation Service.

Railroad Retirement Board to retain its present status as an independent agency.

Inland Waterways Corporation to be put "into immediate liquidation."

Subsidies granted to air lines and ocean carriers in the form of excess mail pay to be financed by "open appropriations."

Creation of a Traffic Management Agency for handling of freight transportation matters for all departments and agencies of the federal government. (Such an agency was created under provisions of an act approved by the President on June 30. Certain military activities are excepted.)

Report on "Transportation and Government." At the request of the Hoover Commission, the Brookings Institution of Washington prepared for that commission a report on the subject of "Transportation and Government." The report was completed in October, 1948. With some changes and additions, it was published by Brookings in October, 1949, under the title of "National Transportation Policy." The report is in three parts. Part I discusses the promotion of transportation facilities and services; Part II deals with regulation of transportation enterprises; Part III outlines defects in our national transportation policy and submits recommendations for reorganization of federal transportation agencies. Defects in national transportation policy outlined in the report include (1) defects in programing and public expenditure policies; (2) conflict between promotional action and regulatory program; (3) intrusion of regulation into the functions of management, and (4) failure of Congress to set up a program of com-

pulsory consolidation for railroads. The report recommends that all executive and promotional activities of the government be concentrated in a Department of Transportation, and that all regulatory functions be transferred to a Transport Regulatory Commission. It is highly critical of subsidies to transportation agencies.

S. Res. 50. Investigation of Transportation. The Senate on April 11, 1949, adopted Senate Resolution 50, which authorizes the Senate committee on interstate and foreign commerce to investigate problems relating to the air line industry, the merchant marine, domestic land and water transportation, and radio, telegraph, and telephone communications. Expenditures not to exceed \$165,000 were authorized to cover the cost of these investigations.

Hearings were held by the committee during April, May, and June, 1949, on the financial condition of the air lines, including the air mail subsidy.

With respect to domestic land and water transportation, the resolution directs the committee "to determine (a) whether existing conditions conform to the national transportation policy as declared in the Interstate Commerce Act, and (b) the effect of large expenditures of public moneys and private capital upon transportation charges and to what extent such expenditures are reflected in costs of production and prices to consumers." The committee is to report its findings and recommend such legislation as may seem advisable at the earliest practicable date. This investigation has been assigned to a subcommittee of which Senator Francis J. Myers, Democrat of Pennsylvania, is chairman. Types of carriers to be covered by the subcommittee's studies include steam and electric railroads, inland water carriers, motor carriers of passengers and freight, Railway Express Agency, Pullman Company, pipe lines, railroad holding companies, and freight forwarders. Senator Myers reported October 6 that progress is being made in laying the groundwork for hearings, and that "considerable headway" has been made as to the effect of large expenditures of public funds on development of the country's transportation system.

Transportation Study Requested by the President. The President on August 30, 1949, requested Secretary of Commerce Sawyer to submit to him by December 1 a report as to major policy issues which should be resolved at this time, "in order to achieve maximum effectiveness and consistency of federal programs in the transportation field." He also asked the secretary's opinion as to the desirability of having the Department of Commerce conduct, on a continuing basis, "broad studies relating to federal transportation policies and programs."

The President pointed out in his letter that the federal government has undertaken various responsibilities for regulating and promoting the transportation industry, and that it provides, either directly or indirectly, such basic facilities as roads, airports, river and harbor improvements, and navigation aids at an annual cost which now approaches \$1.5 billion per year. He concluded that "a unified and coordinated federal program for transportation is clearly essential in order to assure maximum benefits for the government's activities in this field."

The Sawyer report, submitted to the President on December 1, was released to the public on December 13.

The 30,000-word document deals largely with federal promotional activities for air lines, waterways, and highways, although it also discusses railroad problems.

The report points out "that the federal government now engages in a bewildering array of promotional activities in the transport field, whether it be through the provision of facilities, the payment of subsidies, the granting of tax benefits, the disposal at bargain prices of government property, or the direct operation of services by the federal government." It adds: "But there does not seem to be a coherent pattern of promotion applicable to the transportation industry as a whole." The report suggests "the grouping of all major promotional activities under unified direction and control" to relieve the present confusion.

In the case of provision of transportation facilities, the report advocates testing such activities by the criteria of public use and public need, and suggests that consideration be given to a system of user charges. As regards payment of subsidies, either directly or through the medium of air mail payments, the report recommends re-examination of the techniques now employed. Deficits of the Federal Barge Lines are designated as an indirect subsidy to the users of that service.

With respect to railroads, the report states "that federal transportation policy must give major attention to sound and healthy railroads as a part of the transportation system." It regards the problem of railroad consolidation as particularly urgent, and advocates promotion or requirement of consolidations and unifications, and elimination of unprofitable services, as a means of reducing the cost of rail operations.

The Competitive Situation

Although final figures are not yet available, comparatively late data indicate that motor carriers of property and air carriers made substantial traffic gains, 1949 over 1948, but that railroads and oil pipe lines experienced decreases. The American Trucking Associations reported that intercity truck tonnage for the first 10 months of 1949 was approximately 4.3 per cent above the corresponding total for the preceding year. The Air Traffic Conference of America, at a meeting in Chicago late in November, released an estimate for 1949 as follows: 6,500 million air passenger-miles, 42 million air mail ton-miles, 26.5 million air express ton-miles, and 96 million air freight ton-miles. All these totals represented substantial increases over 1948. On the basis of the number of barrels of oil originated and received from connections, oil pipe lines, at the close of the third quarter of 1949, according to reports to the Interstate Commerce Commission, showed a traffic decline of about 9 per cent under the corresponding period of 1948.

Air parcel post completed its first year of service on September 1. A statement issued by the Air Transport Association at that time quoted Post Office officials to the effect that 7 million parcels weighing 14 million pounds were handled by air lines during the first year. Postage collected was estimated at \$9 million.

A list of 314 airport construction or development projects to be undertaken under the Federal Aid Airport Program, during the fiscal year ending June 30, 1950, was announced by the C. A. A. on July 23. The program involves \$29,840,767 in federal funds, local or state

sponsors to provide matching funds totaling \$37,432,752.

The Independent Offices Appropriation Act, for the fiscal year ending June 30, 1950, provided \$385 million for federal-aid highways. This was \$15 million less than the \$400 million recommended in the President's budget, and about \$42 million under the corresponding appropriation for the preceding fiscal year.

The Civil Functions Appropriation Bill, approved October 13, provided appropriations for the fiscal year 1950 totaling \$197,985,690 for the rivers and harbors work of the Army's Corps of Engineers, including \$114,145,690 for new construction. This compares with \$177,489,000 appropriated for similar purposes during the preceding fiscal year.

Other Developments

Office of Defense Transportation Closed. A Presidential Executive Order, signed July 6, 1949, terminated the Office of Defense Transportation as of June 30, and designated the Interstate Commerce Commission as the liquidation agency. The O.D.T. was created by Executive Order on December 18, 1941, and given the task of assuring "maximum utilization of the domestic transportation facilities of the nation for the successful prosecution of the war."

On February 2, 1949, all provisions of O.D.T. General Order 18A, which related to the heavy loading of carload freight, and on April 16, the provisions of O.D.T. General Order 1, relating to the loading of less-than-carload freight, were cancelled.

British Nationalized Transport. Under the terms of the British Transport Act of 1947, the government on January 1, 1948, took over all railways in Great Britain, local passenger transport in London, canals and inland waterways, long-distance highway freight transport, certain of the highway passenger transport operations, and the hotels, docks, and shipping formerly owned and operated by the railways. All these transport operations are conducted under general supervision of the British Transport Commission, a body created by the Act. The first annual report of the commission, covering the calendar year 1948, was published in September, 1949. The consolidated income account, covering all nationalized transport operations for 1948, showed a deficit of 1,715,000 pounds for the year. This was after crediting certain items of nonoperating income, and deducting interest and other general charges. After sinking-fund and other special charges, the final deficit for the year, carried to the balance sheet, became 4,733,000 pounds.

"Deterioration" in Great Britain

It is difficult to appraise the financial results of the British railways alone, during 1948, due to absence of data on a comparable basis for earlier years. However, the net operating revenue of the railways was insufficient to meet the proportionate interest and other charges properly assignable to railway operations.

Operating conditions worsened in 1949. Rail traffic decreased under 1948, and total rail revenues for the first 44 weeks of 1949 were 2.6 per cent less than for the corresponding weeks of 1948. Operating costs at the same time increased, leading the Transport Commission

to predict "a further marked deterioration of the working results" as "inevitable" in 1949. At the close of 1949, the minister of transport had before him for approval a proposal of the commission to further increase freight rates by 16 2/3 per cent. This would be superimposed on increases already made since 1939 totaling 55 per cent, raising it to 81 per cent. British passenger fares are also 55 per cent above prewar levels.

Railroad Retirement Board

Railroad Retirement. Beneficiaries on the retirement rolls of the Railroad Retirement Board numbered 364,950 as of October 31, 1949, which was a net increase of 32,479 over the number of beneficiaries as of October 31, 1948. The 1949 total consisted of 229,794 retirement annuitants, 9,329 pensioners (person transferred from the voluntary rolls of the carriers in 1937) and 125,827 recipients of survivor annuities.

The 1949 increase was materially less than the abnormally high increases recorded during the two preceding years. The increases in those years reflected added survivor benefits and liberalized disability qualifications made effective by the Crosser Act on January 1, 1947.

The increase of 32,479 beneficiaries in 1949 resulted from a net increase of 18,242 in the number of retirement annuities, a net increase of 15,919 in the number of survivor annuities, and a decrease of 1,682 in the number of pensioners by reason of deaths in that group.

The increases in beneficiaries during the past three years are shown in the following tabulation.

	1949 over 1948	1948 over 1947	1947 over 1946
As of October 31			
Increase in annuitants	18,242	17,210	24,902
Decrease in pensioners	1,682	1,881	2,160
Increase in survivor annuities	15,919	49,586	56,040
Net increase	32,479	64,915	78,782

Retirement benefit disbursements during the month of October, 1949, aggregated \$24,818,633 compared with \$23,243,506 for October, 1948. Corresponding disbursements for the month of June, 1948, immediately prior to the increase of 20 per cent in all retirement annuities and in pensions to former carrier pensioners, which became effective under the Wolverton amendments on July 1, 1948, aggregated \$19,147,472. Thus the annual level rose from \$229,769,664 in June, 1948, to \$278,922,072 in October, 1948, and increased further to \$297,823,596 in October, 1949.

Despite increases in wage rates and an increase of 0.25 per cent in the carriers' payroll tax rate for railroad retirement (from 5.75 per cent to 6 per cent, effective January 1, 1949), retirement tax accruals for the first 10 months of 1949, which amounted to \$195,957,000, showed a decrease under the corresponding period of 1948. The decrease was \$7,440,000, or 3.7 per cent, and reflected the lower level of employment in 1949. Corresponding amounts were contributed by railway employees, who share equally with the carriers in taxes paid for retirement purposes.

Railroad retirement payroll taxes are collected by the Bureau of Internal Revenue and deposited in the general fund of the Treasury. Congressional appropriations of the estimated amount of taxes to be collected each year are made to the Railroad Retirement Board. Differences are adjusted in the appropriation for the following year. Congress also appropriates

amounts on account of creditable military service performed by railroad employees. Separate appropriations are made for administrative expenses of the board.

The following tabulation summarizes the financial operations of the railroad retirement system from its inauguration in 1937 to October 31, 1949. Administrative appropriations and expenses are not included.

Receipts:		
From appropriations	\$3,835,011,499	
Interest on investments	176,871,831	
Total		\$4,011,883,330
Benefit payments		1,897,774,726
Balance		\$2,114,108,604

Administrative expenses for the entire period of operation to October 31, 1949, amounted to \$42,812,892.

Railroad Unemployment Compensation. Railroad unemployment compensation benefit payments rose to record high levels in 1949. Benefit disbursements for the first 10 months amounted to \$74,434,938, compared with \$24,271,441 for the corresponding period of 1948, an increase of \$50,163,497. Monthly disbursements ranged from \$4,031,964 in January to \$14,243,924 in October. The peak level of benefit payments in October resulted primarily from enforced reductions in rail employment due to the coal strike, and the Missouri Pacific strike, which began on September 9 and continued for a period of 45 days.

Sickness and Maternity. Benefit disbursements for sickness, injury, and maternity remained at approximately the same levels in 1949 as in 1948. Aggregated disbursements for the 10 months ended October 31, 1949, amounted to \$24,403,007, compared with \$25,201,328 for the corresponding period of 1948. Monthly disbursements in 1949 closely followed the seasonal pattern established in 1948.

Unemployment tax accruals by Class I railways for the ten months ended October 31, 1949, amounted to \$16,330,000, compared with \$17,687,000 for the corresponding period of 1948. Since the current tax rate (0.5 per cent) prevailed during both 1948 and 1949, the decrease for 1949 reflected the reduction in employment.

Under the sliding scale of payroll taxes provided by the Railroad Unemployment Insurance Act, the tax rate for ensuing years will remain at 0.5 per cent so long as the amount in the railroad unemployment reserve amounts to \$450,000,000 or more on September 30 of the preceding calendar year. The officially proclaimed balance as of September 30, 1949, was \$871,299,952, thus assuring a continuation of the 0.5 per cent rate through 1950. This compares with a balance of \$956,096,809 as of September 30, 1948.

The financial results of operation of the railroad unemployment insurance system for the entire period of operation from July 1, 1939, to October 31, 1949, are summarized below:

Receipts:			
Taxes (incl. transfers from states)	\$1,095,504,383		
Interest on unemployment reserve fund	106,088,329		
Total receipts			\$1,201,592,712
Disbursements:			
Benefit disbursements (net):			
Unemployment	\$ 228,672,370		
Sickness (excl. maternity)	62,218,447		
Sickness (maternity)	4,395,631		
Administrative expenses	42,631,972		
Total disbursements			\$ 337,918,420
Balance:			
To credit of unemployment reserve	\$ 857,681,565		
To credit of administrative fund	5,992,727		
Total balance, Oct. 31, 1948			\$ 863,674,292

As of September 30, 1949, the balance of government loans to railroads by the Reconstruction Finance Corporation amounted to \$137,551,254. Railroad loans outstanding a year earlier, on September 30, 1948, totaled \$143,253,602. Thus there was a net decrease of \$5,702,348 during that 12-month period.

A law approved May 25, 1948 (Public Law 548), extended the life of the Reconstruction Finance Corporation for a period of six years beyond June 30, 1948, with allowance for an additional two years, or until June 30, 1956, for liquidation of the agency.

Receiverships and Trusteeships

At the end of 1949, a total of 45 railroad companies, operating 12,910 miles of line, were in the hands of receivers or trustees. This was one less than the number of companies at the end of 1948, when 13,427 miles were similarly situated. Of the total number as of December 31, 1949, two Class I and four smaller lines were in the hands of receivers, while 11 Class I and 28 smaller lines were in the hands of trustees. Principal changes during the year were the emergence from court jurisdiction of the Duluth, South Shore & Atlantic (including the Mineral Range) and the Central of New Jersey. The Long Island went into trusteeship on March 3, 1949.

Capital Expenditures and Purchases

Table 10 shows gross capital expenditures of railways of Class I for additions and betterments, and their purchases of fuel, material and supplies, for the ten years 1940 to 1949.

Capital expenditures for 1949 are estimated at \$1,285 million, which slightly exceeded the previous high of \$1,273 million in 1948, and by a large margin the prewar high of \$1,059 million in 1923. In making comparisons between prewar and postwar years, the much higher level of prices since the war should, of course, be taken into account.

About 75 per cent of the 1949 expenditures was devoted to equipment and 25 per cent to roadway and structures, indicating the current emphasis on new equipment.

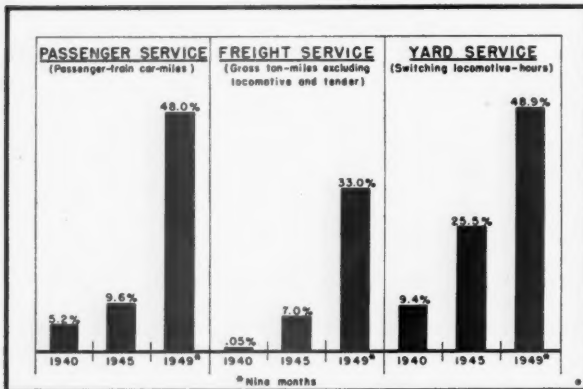
Table 10—Capital Expenditures and Purchases

	Gross capital expenditures (thousands)	Purchases of fuel, material and supplies (thousands)
1949 (Est.)	\$1,285,000	\$1,800,000
1948	1,273,484	2,183,331
1947	864,689	1,909,209
1946	561,957	1,570,555
1945	562,980	1,572,404
1944	560,112	1,610,529
1943	454,282	1,394,281
1942	534,897	1,259,811
1941	543,021	1,161,274
1940	429,147	854,463
Total 10 years	\$7,069,569	\$15,315,857

Purchases of fuel, material and supplies in 1949 amounted to approximately \$1,800 million, a decrease of 17.6 per cent under the corresponding total for 1948. The aggregate for 1949 was the third largest in railway history.

Installations of new equipment by the railroads continued at high levels in 1949. During the first eleven months of the year, 81,312 new freight cars and 1,742

CHART B
GROWTH IN USE OF DIESEL POWER
PER CENT OF TOTAL SERVICE PERFORMED BY
DIESEL-ELECTRIC LOCOMOTIVES
1940 1945 1949*



locomotives were installed, while 694 new passenger-train cars were installed through September.

Railway Equipment

Table 11 shows railroad ownership of equipment, 1943 to 1948 and as of December 1, 1949. Installations of new equipment, and the number of new units on order at the end of the year or period, are also shown.

Table 11—Equipment Ownership and Installations

	Ownership at end of year	Installed during year	On order at end of year
Steam locomotives:			
1949 (Dec. 1)	29,270	*55	15
1948	32,613	86	72
1947	34,800	72	30
1946	37,255	83	64
1945	38,683	109	92
1944	39,451	329	66
1943	39,501	429	339
Diesel & Electric locomotives:			
1949 (Dec. 1)	8,044	*1,687	954
1948	6,368	1,401	1,561
1947	4,964	771	1,196
1946	4,222	480	540
1945	3,730	534	379
1944	3,233	609	402
1943	2,638	344	616
Freight-carrying cars:			
1949 (Dec. 1)	1,762,643	*81,312	14,340
1948	1,754,840	102,737	89,437
1947	1,731,231	63,312	105,112
1946	1,739,930	40,377	63,829
1945	1,759,662	38,987	37,160
1944	1,764,109	40,392	36,597
1943	1,750,279	28,708	35,737

*eleven months

During the first eleven months of 1949, steam locomotive ownership continued to decline, whereas ownership of electric and Diesel-electric locomotives maintained their rapid upward trend. Steam locomotives owned on December 1, 1949, numbered 3,343 less than on December 31, 1948, and ownership of electric and Diesel locomotives increased by 1,676. Since the end of 1943, ownership of steam locomotives has decreased by 10,231, while there has been a net increase of 5,406 electric and Diesel locomotives. These figures are expressed in numbers, and take no account of the generally greater efficiency of the modern Diesel locomotive, compared with the steam locomotive which it replaces.

The striking trend toward Dieselization in recent years is shown in graphic form on Chart B, which com-

pares the proportionate use of Diesel motive power in 1949 with that of 1945 and 1940. In each of the three principal services—passenger, freight, and yard—Diesel utilization has increased steadily since 1940. Nearly one-half (48.0 per cent) of total car-miles in passenger service, nearly one-half (48.9 per cent) of the locomotive-hours in yard service, and nearly one-third (33.0 per cent) of the gross ton-miles in freight service, were produced by Diesel power in 1949.

Locomotive supply was adequate, and stored serviceable units afforded a margin of safety throughout the year. The proportion of unserviceable locomotives (both steam and Diesel) rose gradually throughout the year, increasing from 6.5 per cent on January 1 to 9.3 per cent on December 1.

Installations of new freight cars during the first eleven months of 1949 totaled 81,312. Total installations for the year 1949 approximated 85,000, compared with 102,737 for the year 1948. This 1949 total was greater than for any year since 1926, excepting only 1948.

Freight car ownership of the railroads on December 1, 1949, totaled 1,762,643, a net increase of 7,803 cars over the ownership at the end of 1948. This moderate gain in freight car ownership, together with a sharp decline in traffic handled, helped to relieve the car situation. The maximum daily shortage in 1949, occurring during the week of October 8, was 12,452 cars. This compared with a maximum in 1948 of 22,091 cars, for the week of October 30. Freight car shortages continued throughout 1949, though to a lesser extent than in 1948. The demand for box cars was heavy, particularly in the fall months, and the bulk of the shortages occurred in that type of car. Small box car shortages were reported throughout the year, but not until fall did the reported surplus become smaller than the shortage. In other words, the early shortages were due to distribution rather than overall lack of equipment. Labor trouble in the coal fields eased the demand for open top cars, though shortages did occur in certain weeks.

With prospective increases in traffic, need still exists for more box, gondola, and flat cars. Gondola retirements exceeded new installations during the first eleven months of the year by 2,983, box car retirements were 9,196 greater than new installations, and flat car retirements exceeded installations by 2,281 cars.

Unserviceable freight cars rose from a low of 4.7 per cent on January 1, 1949, to 7.7 per cent on December 1.

Total ownership of passenger-train cars decreased slightly, from 39,302 at the close of 1948 to 38,903 at the end of September, 1949. New passenger-train equipment of all types installed by the railroads during the first nine months of 1949 totaled 694 units, of which 420 were sleepers, 107 were dining cars, 85 were coach and coach combinations, and 29 were baggage, express and postal cars. The remaining 53 were parlor cars, rail motor cars, etc.

Operating Efficiency and Economy

Locomotives on order as of December 1, 1949, totaled 969 (of which 950 were Diesels), and freight car orders numbered 14,340. Passenger-train car orders on October 1 totaled 1,319.

The next four tables compare significant performance

averages for the first ten months of 1949 with annual averages for the years 1941 to 1948. Comparable figures for 1929 are also shown.

It should be recognized that traffic volume influences some of these averages. All things equal, performance will usually show to better advantage in periods of high traffic volume. The fact that these averages maintained high levels in 1949, despite sharply curtailed traffic volume, speaks well for the efficiency of the railroad industry.

Ton-miles per freight train-hour, which combines both load and speed factors, is a highly significant freight performance average. It shows the unit output per hour of freight train operation. The average is computed on two bases: (1) gross ton-miles of cars and contents per freight train-hour, and (2) net ton-miles (lading only) per freight train-hour. Both averages are shown in Table 12. Those for the first ten months of 1949 indicate that new records for each of the two averages were set for the year.

Table 12—Ton-miles per Freight Train-hour

Year	Gross ton-miles	Net ton-miles
1949 (10 mos.)	42,365	19,039
1948	39,905	18,779
1947	38,462	18,126
1946	37,057	17,173
1945	36,954	17,482
1944	37,298	17,623
1943	35,970	16,997
1942	35,503	16,132
1941	36,684	14,930
1929	24,539	10,580

Certain other significant operating factors are shown in the next tabulation, Table 13, daily mileage averages for locomotives and freight cars. War traffic called for long hauls and resulted in increased daily mileage for both locomotives and cars. As some of the favorable factors have disappeared in the postwar period, these averages have tended to recede. Current performance is still, however, well above that of prewar days.

Freight locomotives, in the first ten months of 1949, averaged 112.2 miles per day, 4.3 per cent less than in the year 1948. Passenger locomotives on the other hand, showed an increase of 3.0 per cent in average daily mileage for the same period. Freight cars averaged 42.8 miles per day during the first ten months of 1949, a decrease of 9.3 per cent under the year 1948.

These averages were substantially above the corresponding averages for 1929, 20 years earlier. Freight locomotive performance in 1949 was 23.0 per cent above that for 1929, passenger locomotive performance 38.5 per cent, and freight car performance 24.4 per cent.

Table 13—Daily Mileage of Locomotives and Cars

Year	Freight locomotives	Passenger locomotives	Freight cars
1949 (10 mos.)	112.2	227.9	42.8
1948	117.2	221.3	47.2
1947	120.3	219.0	48.8
1946	115.9	221.8	45.2
1945	118.4	226.9	49.3
1944	122.8	222.9	51.9
1943	124.5	220.9	51.0
1942	122.4	206.8	48.8
1941	116.4	195.6	43.7
1929	91.2	164.5	34.4

Average train speeds, the only performance averages to fall off during the war, have since turned up again. The averages for the first ten months of 1949 and earlier calendar years are shown in Table 14.

Average freight train speed during the first ten months

of 1949 increased 4.3 per cent over the year 1948. If this spread was maintained during the last two months of the year, a new annual record will have been established. Passenger train speed for the ten months increased 1.0 per cent, also a new record if maintained for the balance of the year.

Table 14—Average Train Speed (m.p.h.)

Year	Freight trains	Passenger trains
1949 (10 mos.)	16.9	38.5
1948	16.2	38.1
1947	16.0	37.5
1946	16.0	36.7
1945	15.7	35.7
1944	15.7	35.8
1943	15.4	35.7
1942	15.8	36.9
1941	16.5	37.6
1929	13.2	...

Average loading per train and per car in both freight and passenger services decreased during the first ten months of 1949, compared with the year 1948. Table 15 shows average load per car and per train in both freight and passenger services.

Table 15—Average Train and Car Loads

Year	Freight Service		Passenger Service	
	Net tons per train	Net tons per car	Passengers per train	Passengers per car
1949 (10 mos.)	1,140	31.4	*93.8	*18.3
1948	1,176	32.9	101.1	19.4
1947	1,146	32.6	110.7	21.0
1946	1,086	31.3	144.3	24.5
1945	1,129	32.2	190.5	30.2
1944	1,139	32.7	200.7	31.9
1943	1,116	33.3	189.5	31.1
1942	1,035	31.8	125.5	23.1
1941	915	28.5	73.2	15.8
1929	804	26.9	55.0	12.5

*nine months

In freight service, the decreases in average loads for the first ten months of 1949 compared with the year 1948 were as follows: Net tons per train, 36 tons, or 3.1 per cent; net tons per car, 1.5 tons, or 4.6 per cent.

In passenger service, the decreases for the first nine months of 1949 compared with the year 1948 were 7.3 passengers per train, or 7.2 per cent; 1.1 passengers per car, or 5.7 per cent.

Here, again, the results for 1949 were substantially better than before the war. This is true, whether the comparison be made with either 1929 or 1941. Using 1929 as the yardstick, the averages for 1949 in Table 15 show the following percentage increases:

Average freight train load	41.8%
Average freight carload	16.7
Average passenger train occupancy	70.5
Average passenger car occupancy	46.4

Railway Safety

Statistics for the first ten months of 1949 indicate that railroads conducted their operations on the safest basis ever recorded. Substantial reductions were effected below 1948 in fatal and nonfatal injuries to passengers, to employees and to other persons. Fatalities in railway accidents of all kinds were fewer than for any previous comparable period.

The volume of passenger traffic in 1949 was about 15 per cent below 1948. Fatalities to passengers on trains during the first ten months of the year were reduced 42.1 per cent below the same period of 1948. Nonfatal injuries to passengers in the same ten months showed a reduction of 29.7 per cent.

Railroad employment in 1949 was about ten per cent

below 1948. Dealing with the same ten-month period, the number of fatal injuries to employees was reduced 30.1 per cent. Nonfatal injuries to employees showed a reduction of 28.2 per cent.

Despite the greater number of automobiles operating over the highways in 1949, fatal and nonfatal injuries at highway grade crossings during the first ten months decreased 9.1 and 13.1 per cent, respectively.

Considering fatal and nonfatal injuries to all classes of persons during the first ten months of 1949 and 1948, fatalities decreased 13.1 per cent, while nonfatal injuries were reduced 25.8 per cent.

Conclusions

What conclusions can be drawn from a review of railway operations in 1949? Perhaps the first is that the year was one of many developments, along many and varied lines. Some came to a head during the year; others are still in process.

When these developments and trends are surveyed within the narrow compass of a single year, some of them appear confused, and at times discouraging. Placed in long-range perspective, however, they serve to point up the many inherent weaknesses in the nation's transportation policy.

Although railroads are moving relatively large volumes of traffic, at rates and fares substantially above those of 1939, their current return on net investment has averaged only 3¼ per cent since the war, and currently is less than 3 per cent. These levels are below what is needed to keep the industry in a state of financial health.

Within the industry, the railroads have made progress. By voluntary efforts on the part of many companies, and through the process of corporate reorganization in the case of some, substantial reductions have been effected in railroad debt and in annual charges. During the four postwar years, capital expenditures have aggregated four billion dollars, an average of a billion dollars per year. The equipment situation shows improvement, and the result of the whole capital program, including the growing Dieselization of motive power, will be reflected in future operations. Further steps can and will be taken. Railroads are alert to the necessity for such measures, and are using their best efforts to put them into effect.

The railroad industry is subject to many major forces operating outside its own particular field. Traffic volumes are highly sensitive to the general economic situation.

Rising unit costs of railroad labor and railroad material, which lie largely beyond managerial control, have had their effect on the income account.

Chief among the many forces that affect railroad operations is the artificial ceiling placed over railroad rates and fares by the continuing and expanding aids afforded by governments to competing agencies of transport. With the possible exception of pipe lines, no agency of transport is now charging rates and fares adequate to cover the full costs of the transportation services produced. This has resulted in, and continues to breed, discrimination, chaotic conditions, and the growth of uneconomic tendencies in the whole transportation system.

On the other hand, there is growing awareness, on the part of government and the public, of the necessity of maintaining railroads in a condition of financial health, in order that they may serve both the freight and passenger requirements of the nation, in times of either peace or emergency. This one fact, among others, has been emphasized in the several transportation studies and investigations completed or inaugurated in 1949.

These several studies—Hoover Commission, Brookings Institution, Department of Commerce (Sawyer report), and the Senate (S. Res. 50)—have reached or perhaps will reach differing recommendations on the various phases of transportation. All, however, agree that governmental policies are chaotic and contradictory, and that remedies should be applied in the interest of economy and efficiency. They lay emphasis on the following five points:

(1) All the studies are focused on transportation as a whole, rather than on any one segment, such as the railroads. They all recognize the importance of the railroad industry, and appreciate the discriminations under which it operates. But they properly emphasize every phase of domestic transportation in the United States, and the relations of the several agencies to each other.

(2) Governmental policies in general are confused, and are administered by too many separate agencies, which function under differing directives and philosophies.

(3) Promotional activities of the government are wasteful, and are conducted by many agencies according to varying standards. The result is extravagance, confusion, duplication and discrimination.

(4) The studies recognize, some more definitely than others, the uneconomic effect of subsidies. They recommend either outright elimination of subsidies, or at least an objective study of that question. This general and frank recognition of a serious economic problem is of somewhat recent development.

(5) Regulatory activities are also scattered and confused, and should at least be coordinated. The studies differ in the remedies suggested, which range from a new Department of Transportation and an overall Transport Regulatory Commission down to less radical changes. But the subject is under survey.

How these studies eventually will affect governmental policies is still an open question. Constructive changes, if they result, can be made only after thoughtful and broad-gage consideration by Congress, by the government agencies involved, and by the several transportation groups themselves, all working together in a co-operative and objective manner.

In balance, and taking a long-term view, railroad prospects may be regarded with a reasonable amount of optimism. The principal trouble spots are being located.

The several transportation studies now under consideration and in progress should result in appropriate steps necessary to preservation of, and greater progress toward, a sound transportation system, operated under private management and with only such government regulation as may be needed. Viewed from this angle, 1950 may prove indeed to be a year of decision.

1949 PURCHASES Total \$2,300 Million

**Inventories drop after years of upward trend—
Equipment delivered worth approximately \$635 million**

By J. W. MILLIKEN

Associate Editor, Purchases and Stores

1949 RAILWAY PURCHASES**

	Oct. '49 (000)	Nov. '49 (000)	Dec. '49 (000)	Cumulative total, 1949 (000)
Equipment*	\$12,445	\$44,410	\$49,797	\$217,032
Rail	5,067	6,000	7,000	104,387
Crossties	6,227	6,500	7,000	91,324
All other material	59,407	60,500	59,000	947,579
Total from manufact.	\$83,146	\$117,410	\$122,797	\$1,360,322
Fuel	29,767	24,000	27,000	521,326
Grand total	\$112,913	\$141,410	\$149,797	\$1,881,648*

*Includes only equipment placed on order

**Subject to revision

Expenditures of the Class I railroads of the United States for materials, supplies and fuel, plus outlays for equipment delivered, totaled approximately \$2,300,000,000 in 1949, of which about \$1,664,616,000 was spent for fuel and supplies other than equipment. Considering the 1949 decline in railroad traffic, as well as welcome price decreases on some materials, that total compares not unfavorably with earlier years. It is, in fact the greatest figure in the decade of the Forties, with the exception of 1947 and 1948, although it is 24 per cent below outlays for fuel and supplies in the latter year. The only increases among categories of supplies, on a dollar basis, were the expenditures for rail and crossties, which exceeded the 1948 figure somewhat. Fuel purchases, down sharply from 1948, were of course curtailed considerably by the frequent work-stoppages in the coal mining industry, while fairly substantial price reductions, too, had an effect on the total dollar volume of fuel bought.

Purchases of rail and crossties were relatively heavy in 1949, in view of the fact that practically every other type of supply was bought in smaller volume. Rail prices, incidentally, remained unchanged throughout 1949 until mid-December, when there was an increase of about 6 per cent, following settlement of the steel strike. Apparently, therefore, there was some increase in the tonnage of steel rail delivered in 1949 as compared with 1948. Tie prices showed a considerable decline in the year between November 15, 1948, and the same date in 1949, which makes it quite evident that there was actually an increase in the number of ties bought or in the proportion of higher grades of ties in the total, or both.

While purchases of rail and crossties were fairly

heavy in the past year, inventories of these articles remained at a rather high level until October 1, the last date for which figures were available as this issue went to press. Rail and tie installations were seriously curtailed as a result of the various work-stoppages in the steel and coal industries, and it was mainly because of the related retrenching action of the railroads that these inventories held up to this high level. Many roads now have plenty of rail and ties on hand for the beginning of the summer maintenance work in 1950. With business prospects for 1950 seemingly good it appears likely that the need to catch up on deferred maintenance will put the railroads in the market for increased quantities of these materials in this year.

Orders for new equipment fell off sharply in 1949 as compared with 1948, although deliveries against commitments made, for the most part, in previous years, totaled roughly \$635 million. Toward the close of the year there were signs of renewed activity in the equipment buying field, with more than 1/3 of the year's dollar volume of equipment orders coming in the last three months. Although most of these orders were for motive power, there were signs that orders for freight cars are again on the upgrade, and although they may not hit the 1947 peak, the revival should attain substantial proportions in 1950 if railroad revenues are not abnormally affected by conditions beyond the carriers' control.

During 1949, orders for new freight cars totaled 9,188, the estimated cost of which will be \$48,118,000. Passenger cars ordered totaled 128, for which the railroads have earmarked about \$15.5 million. Locomotive builders got the bulk of the equipment business when the railroads made commitments for 1,808 locomotives, of which 13 were steam, 10 electric and 1,785 were Diesel-electric units. The estimated cost of these locomotives is approximately \$163,415,000.

Annual Purchases of Equipment—Class I Railroads

Year #		Year #	
1930	\$146,471	1940	\$264,943
1931	28,873	1941	414,690
1932	2,623	1942	325,000†
1933	5,857	1943	248,000†
1934	66,850	1944	255,000
1935	35,696	1945	320,100
1936	240,594	1946	629,510
1937	194,153	1947	701,616
1938	74,006	1948	660,017
1939	188,838	1949	217,032*

* Preliminary Estimates.

† Estimated value of orders for new locomotives and cars.

‡ Estimated value of orders for new locomotives and cars built by equipment builders and placed in service during 1942 and 1943.

1949 PURCHASES OF MANUFACTURED GOODS (Excl. Equipment and Fuel)*

December '49 Compared to Other Months '49 (000)		
Month	Amt.	% Change
Jan.	\$114,861	-36
Feb.	109,317	-33
Mar.	118,808	-38
Apr.	111,742	-35
May	106,593	-32
June	103,429	-29

December '49 Compared to Other Months '49 (000)		
Month	Amt.	% Change
July	\$95,494	-24
Aug.	89,056	-18
Sept.	77,289	-6
Oct.	70,701	+3
Nov.	73,000	
Dec.	73,000	

Twelve Month Totals '49 And Other Years (000)		
Year	Amt.	% Change
1943	\$ 866,985	+40
1944	1,024,697	+11
1945	1,017,249	+12
1946	1,017,402	+12
1947	1,217,579	-6
1948	1,350,291	-15
1949	1,143,290	

1949 PURCHASES OF RAIL*

December '49 Compared to Other Months '49 (000)		
Month	Amt.	% Change
Jan.	\$7,361	-5
Feb.	8,637	-19
Mar.	10,264	-32
Apr.	10,818	-35
May	9,807	-29
June	9,997	-30

December '49 Compared to Other Months '49 (000)		
Month	Amt.	% Change
July	\$10,953	-36
Aug.	10,257	-32
Sept.	8,226	-15
Oct.	5,067	+38
Nov.	6,000	+17
Dec.	7,000	

Twelve Month Totals '49 And Other Years (000)		
Year	Amt.	% Change
1943	\$60,074	+74
1944	75,763	+38
1945	77,038	+36
1946	65,302	+60
1947	87,608	+19
1948	100,073	+4
1949	104,387	

1949 PURCHASES OF CROSSTIES*

December '49 Compared to Other Months '49 (000)		
Month	Amt.	% Change
Jan.	\$7,859	-11
Feb.	7,095	-1
Mar.	8,362	-16
Apr.	8,159	-14
May	8,065	-13
June	8,600	-19

December '49 Compared to Other Months '49 (000)		
Month	Amt.	% Change
July	\$7,613	-8
Aug.	8,111	-14
Sept.	7,733	-9
Oct.	6,227	+12
Nov.	6,500	+8
Dec.	7,000	

Twelve Month Totals '49 And Other Years (000)		
Year	Amt.	% Change
1943	\$83,402	+9
1944	85,202	+7
1945	77,389	+18
1946	88,478	+3
1947	92,098	-1
1948	87,916	+4
1949	91,324	

1949 PURCHASES OF OTHER MATERIALS*

December '49 Compared to Other Months '49 (000)		
Month	Amt.	% Change
Jan.	\$99,641	-41
Feb.	93,585	-37
Mar.	100,182	-41
Apr.	92,765	-36
May	88,721	-33
June	84,832	-30

December '49 Compared to Other Months '49 (000)		
Month	Amt.	% Change
July	\$76,928	-23
Aug.	70,688	-17
Sept.	61,330	-4
Oct.	59,407	-1
Nov.	60,500	-2
Dec.	59,000	

Twelve Month Totals '49 And Other Years (000)		
Year	Amt.	% Change
1943	\$723,509	+31
1944	863,732	+10
1945	862,822	+10
1946	863,622	+10
1947	1,037,873	-9
1948	1,162,302	-17
1949	947,579	

1949 PURCHASES OF FUEL*

December '49 Compared to Other Months '49 (000)		
Month	Amt.	% Change
Jan.	\$65,089	-68
Feb.	57,530	-53
Mar.	57,760	-53
Apr.	49,848	-46
May	52,391	-48
June	45,403	-41

December '49 Compared to Other Months '49 (000)		
Month	Amt.	% Change
July	\$36,946	-27
Aug.	40,743	-34
Sept.	34,849	-23
Oct.	29,767	-9
Nov.	24,000	+13
Dec.	27,000	

Twelve Month Totals '49 And Other Years (000)		
Year	Amt.	% Change
1943	\$527,296	-1
1944	585,832	-11
1945	555,155	-6
1946	553,153	-6
1947	691,630	-25
1948	833,040	-37
1949	521,326	

1949 TOTAL PURCHASES (Excl. Equip.)*

December '49 Compared to Other Months '49 (000)		
Month	Amt.	% Change
Jan.	\$179,950	-44
Feb.	166,847	-40
Mar.	176,568	-43
Apr.	161,590	-38
May	158,984	-37
June	148,832	-33

December '49 Compared to Other Months '49 (000)		
Month	Amt.	% Change
July	\$132,440	-24
Aug.	129,799	-23
Sept.	112,138	-11
Oct.	100,468	
Nov.	97,000	+3
Dec.	100,000	

Twelve Month Totals '49 And Other Years (000)		
Year	Amt.	% Change
1943	\$1,394,281	+19
1944	1,610,529	+3
1945	1,572,404	+6
1946	1,570,555	+6
1947	1,909,209	-13
1948	2,183,331	-24
1949	1,664,616	

*November and December, 1949, figures are preliminary and 1948 totals are subject to revision.

1949, INVENTORIES OF RAIL**

Oct. 1, '49 Compared to Other Months '49 (000)		
Month	Amt.	% Change
Jan. 1	\$33,243	+13
Feb.	36,408	+3
Mar.	39,054	-4
Apr.	42,681	-12
May	41,264	-9

Oct. 1, '49 Compared to Other Months '49 (000)		
Month	Amt.	% Change
June 1	\$38,365	-2
July	36,486	+3
Aug.	37,162	+1
Sept.	39,057	-4
Oct.	37,475	

Oct. '49 Compared to Other Octs. (000)		
Year	Amt.	% Change
1943	\$19,764	+90
1944	22,253	+68
1945	25,158	+49
1946	25,783	+45
1947	28,084	+33
1948	33,163	
1949	37,475	

1949 INVENTORIES OF CROSSTIES**

Oct. 1, '49 Compared to Other Months '49 (000)		
Month	Amt.	% Change
Jan. 1	\$94,256	+2
Feb.	94,164	+2
Mar.	98,833	-2
Apr.	101,987	-5
May	101,641	-5

Oct. 1, '49 Compared to Other Months '49 (000)		
Month	Amt.	% Change
June 1	\$94,615	+2
July	96,167	
Aug.	92,476	+4
Sept.	92,126	+5
Oct.	96,515	

Oct. '49 Compared to Other Octs. (000)		
Year	Amt.	% Change
1943	\$61,665	+57
1944	70,322	+37
1945	63,300	+25
1946	75,701	+27
1947	87,829	+10
1948	79,148	+22
1949	96,515	

1949 INVENTORIES OF OTHER MATERIAL**

Oct. 1, '49 Compared to Other Months '49 (000)		
Month	Amt.	% Change
Jan. 1	\$611,864	-5
Feb.	626,423	-7
Mar.	636,700	-9
Apr.	647,641	-10
May	642,872	-9

Oct. 1, '49 Compared to Other Months '49 (000)		
Month	Amt.	% Change
June 1	\$634,929	-8
July	623,281	-7
Aug.	613,685	-5
Sept.	595,665	-2
Oct.	581,945	

Oct. '49 Compared to Other Octs. (000)		
Year	Amt.	% Change
1943	\$378,022	+54
1944	430,811	+35
1945	450,008	+29
1946	472,764	+23
1947	558,987	+4
1948	611,887	-5
1949	581,945	

1949 INVENTORIES OF SCRAP**

Oct. 1, '49 Compared to Other Months '49 (000)		
Month	Amt.	% Change
Jan. 1	\$18,849	-15
Feb.	18,735	-14
Mar.	18,532	-13
Apr.	18,872	-15
May	17,936	-10

Oct. 1, '49 Compared to Other Months '49 (000)		
Month	Amt.	% Change
June 1	\$16,877	-5
July	16,535	-3
Aug.	15,939	+1
Sept.	16,241	-1
Oct.	16,053	

Oct. '49 Compared to Other Octs. (000)		
Year	Amt.	% Change
1943	\$8,170	+96
1944	11,488	+40
1945	10,183	+58
1946	11,424	+41
1947	10,426	+54
1948	14,378	+12
1949	16,053	

1949 INVENTORIES OF FUEL**

Oct. 1, '49 Compared to Other Months '49 (000)		
Month	Amt.	% Change
Jan. 1	\$96,900	-34
Feb.	91,831	-31
Mar.	88,647	-28
Apr.	82,014	-23
May	81,686	-22

Oct. 1, '49 Compared to Other Months '49 (000)		
Month	Amt.	% Change
June 1	\$83,436	-24
July	81,567	-22
Aug.	75,954	-16
Sept.	71,341	-11
Oct.	63,534	

Oct. '49 Compared to Other Octs. (000)		
Year	Amt.	% Change
1943	\$61,925	+3
1944	67,357	-6
1945	57,279	+11
1946	54,797	+15
1947	56,629	+12
1948	95,874	-34
1949	63,534	

1949 TOTAL INVENTORIES**†

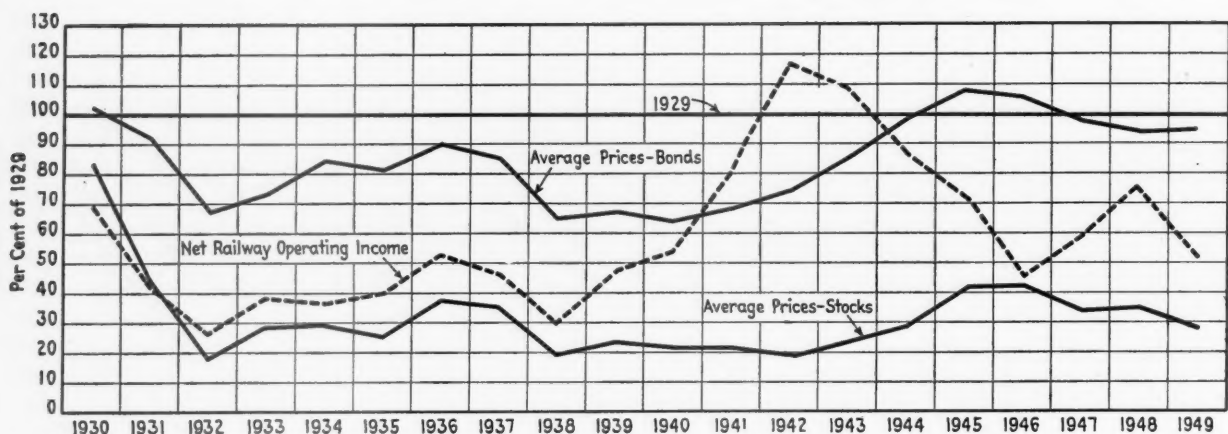
Oct. 1, '49 Compared to Other Months '49 (000)		
Month	Amt.	% Change
Jan. 1	\$855,112	-7
Feb.	867,561	-8
Mar.	881,766	-10
Apr.	893,195	-11
May	885,399	-10

Oct. 1, '49 Compared to Other Months '49 (000)		
Month	Amt.	% Change
June 1	\$868,222	-8
July	854,036	-7
Aug.	835,216	-5
Sept.	814,430	-2
Oct.	795,522	

Oct. '49 Compared to Other Octs. (000)		
Year	Amt.	% Change
1943	\$529,546	+50
1944	602,231	+32
1945	605,928	+31
1946	640,469	+24
1947	741,955	+7
1948	834,450	-5
1949	795,522	

**October, 1949, figures subject to revision

†All total inventory figures taken from I. C. C. statement M-125 for the month indicated



"New Capital" Need Dominates Railroad FINANCE

Equipment trust certificates find ready market, but stock and bond financing continues small; increase in total funded debt offset by increase in total property investment

One outstanding question — how to obtain money for improvement of fixed properties — dominated the field of railroad finance throughout the year 1949.

That problem is not a new one. It has long been recognized, and has aroused grave concern both in, and outside of, the railroad industry proper. But it is assuming steadily more serious proportions, as higher labor costs and accelerated diversion of traffic to competitive forms of transportation combine to reduce railroad earnings, and, consequently, to reduce the willingness of the investing public to buy railroad securities.

Essentials of the Problem

Fundamentally, the problem is a simple one. The railroads are the only form of transportation (except pipe lines) which are required by public policy to provide, maintain and pay taxes on their own rights-of-way, stations, terminals, yards, signal systems and other fixed facilities. To provide the quality of service which will attract and hold business, to meet competition, to keep costs down to reasonable levels, and to be prepared for possible emergencies, the railroads must not only maintain, but must constantly improve, those fixed facilities. Money for such improvements must come from one of three sources: (1) Sale of stock, (2) sale of bonds, or (3) railroad earnings.

Tables accompanying this article were prepared by Edith Stone and Ann Orillinghaus of the Railway Age staff.

By **GARDNER C. HUDSON**
News Editor

As shown by one of the accompanying tables, new issues of railroad stock have been offered for sale to the public in only four of the past 16 years, and the total value of all such issues has been less than \$5 million. Railroad bonds have been offered in considerably larger volume, but many of these have been sold to retire or refund earlier bond issues—not to raise new money for improvement of fixed property. (Some individual companies, of course, might successfully sell bonds, or even stock, for the latter purpose, but they, generally speaking, are the companies which can come closest to meeting their fixed property improvement requirements out of their own earnings. The companies with poorer earnings records — usually the ones which need improvement the most — are also the ones which have found it impossible, in recent years, to sell either bonds or stock.)

For the industry as a whole, earnings are, and long have been, the only important source of money for improvements in fixed facilities. Such "plowing back" of profits is, in large measure, both wise and justifiable. But it does have certain disadvantages. For one thing, it means that the amount of money spent on fixed property is limited, and determined, by earnings, rather than

by such benefits, in the way of lower costs or increased traffic, as might reasonably be expected to result from improvement of that property. For another, it reduces the proportion of earnings that might otherwise be used to improve the industry's credit standing by retiring debt, paying larger or more regular dividends, or building up financial reserves. In the third place, under present tax laws, it is necessary to earn approximately \$1.60, before taxes, to have \$1 available for property betterment. And finally, total earnings from year to year have not been large enough to permit the needed degree of steady and consistent improvement.

Until the railroads can be assured, as an industry, of obtaining with reasonable regularity adequate funds for improvement of their fixed properties, and until they have some choice in the method of obtaining those funds, they cannot be regarded as financially healthy. That would be true even if they possessed a complete monopoly of transportation; it is immeasurably more true because privately built railroad tracks are in competition with publicly built highways, waterways and airways on which expenditures are determined by political expediency rather than by economic common sense, or by the financial resources of their users.

Underlying Causes

Many suggestions have been advanced as to the underlying causes of the problem. Diversion of traffic to subsidized agencies of transportation; a government-created "atmosphere which bristles with uncertainty and even hostility"; public fear of wide fluctuations in railroad earnings or of further wholesale reorganizations in the event of another major business depression; public fear, also, of unreasonable "featherbedding" demands by organized railroad labor; and even the railroads' own publicity with respect to their competitive problems, were the more important reasons suggested to the New York Railroad Club by a panel of railroad financial

specialists on November 17, 1949. (See *Railway Age* of November 26, 1949, page 34.) The publicity given by the railroads themselves to the results of the government's policy of fostering, favoring and subsidizing their competitors was suggested as a contributory cause in a committee report to the Hollywood, Fla., convention of the Investment Bankers Association of America early in December.

But whatever the cause, or causes, the problem is one which must be met, and, if possible, solved within the comparatively near future.

The record of the past few years makes it abundantly clear that the problem will not solve itself. A few years of good, even abnormally good, earnings, will not cure it; the railroads' wartime and immediate postwar earnings did not noticeably improve the industry's credit position, nor make investors more willing to purchase railroad securities. On the contrary, the action of the government in refusing to allow any substantial portion of those earnings to be set aside for postwar investment, and in attempting now to recapture some of them

New Issues of Railroad Securities Offered for Sale in the United States, 1934-1949†

(Amounts in thousands of dollars)

Year	Bonds	Stock	Railroad total	Total all industries	Railroad as per cent of total
1934.....	\$176,423	....	\$176,423	\$ 397,240	44.4
1935.....	126,031	....	126,031	2,331,630	5.4
1936.....	793,618	\$3,838	797,456	4,571,670	17.4
1937.....	344,257	....	344,257	2,309,524	14.9
1938.....	54,873	....	54,873	2,154,664	2.5
1939.....	185,474	233	185,707	2,164,007	8.6
1940.....	323,912	....	323,912	2,677,173	12.1
1941.....	366,313	....	366,313	2,666,887	13.7
1942.....	47,726	....	47,726	1,062,288	4.5
1943.....	161,179	....	161,179	1,169,692	13.8
1944.....	609,010	350	609,360	3,201,891	19.0
1945.....	1,453,517	504	1,454,021	6,010,985	24.2
1946.....	711,119	....	711,119	6,899,646	10.3
1947.....	285,680	....	285,680	6,576,824	4.3
1948.....	623,348	....	623,348	7,112,820	8.8
1949*.....	418,903	....	418,903	4,693,529	8.9

*10 months total.

†Compiled by Securities and Exchange Commission.

Capitalization and Investment—Class I, II and III Line-Haul Railways

(Excluding Switching and Terminal Companies)

(Amounts in thousands of dollars)

	Net capitalization in hands of public			Total property investment, cash and materials and supplies	Accrued depreciation and amortization of defense projects	Net property investment
	Capital stock	Funded debt	Total			
1927.....	\$6,756,046	\$11,380,645	\$18,136,691	\$24,589,861	\$1,952,176	\$22,637,683
1928.....	7,084,045	11,426,538	18,510,583	24,871,964	2,049,962	22,822,002
1929.....	7,212,586	11,467,121	18,679,707	26,492,268	2,169,737	24,322,531
1930.....	7,185,499	11,880,127	19,065,626	26,955,634	2,360,767	24,594,867
1931.....	7,111,029	11,830,431	18,941,460	26,825,724	2,520,739	24,304,985
1932.....	7,057,936	11,835,523	18,893,459	26,736,597	2,632,924	24,103,673
1933.....	7,174,773	11,656,139	18,830,912	26,523,278	2,707,943	23,815,335
1934.....	7,038,963	11,613,528	18,652,491	26,340,440	2,764,726	23,575,714
1935.....	7,001,706	11,340,591	18,342,297	26,213,134	2,771,405	23,441,729
1936.....	7,095,196	11,240,691	18,335,887	26,298,254	2,809,063	23,489,191
1937.....	7,068,863	11,250,140	18,319,003	26,401,665	2,950,848	23,450,817
1938.....	7,022,845	10,965,138	17,987,983	26,389,394	3,044,972	23,344,422
1939.....	6,990,933	10,707,225	17,698,158	26,423,591	3,102,778	23,320,813
1940.....	7,020,559	10,609,054	17,629,613	26,641,133	3,195,237	23,545,896
1941.....	7,004,290	10,563,913	17,568,203	26,940,418	3,240,145	23,700,273
1942.....	6,960,517	10,354,042	17,314,559	27,309,370	3,561,571	23,747,799
1943.....	6,921,057	9,833,925	16,754,982	27,957,306	3,939,562	24,017,744
1944.....	6,964,336	9,311,553	16,275,889	28,213,434	4,382,605	23,830,829
1945.....	7,007,707	8,659,219	15,666,926	28,580,775	5,549,720	23,031,055
1946.....	7,013,558	8,495,418	15,508,976	28,839,494	5,800,975	23,038,519
1947.....	7,001,804	8,298,971	15,300,775	29,436,287	6,037,032	23,399,255
1948.....	6,915,155	8,551,945	15,467,100	30,463,378	6,279,892	24,183,486

Figures from Bureau of Railway Economics, Association of American Railroads, and Interstate Commerce Commission Statistics of Steam Railways.

through "repudiation" suits has undoubtedly far more than offset any helpful effect those earnings might have had credit-wise.

The year 1949, with its introduction of higher labor costs through the 40-hr. week for non-operating employees, and its reduction of traffic and earnings as a

result of labor difficulties in the coal and steel industries, not only has contributed nothing to the solution of the problem, but has, rather, made it worse.

Neither, apparently, will further improvement in the railroads' basic financial structure have any great effect. That structure, as pointed out below, has shown a

Representative Equipment Trust Issues Sold in 1949

Road	Maturity	Amount	Int. Rate %	Sold to Bank		Purchaser
				Price	Cost	
Atlantic Coast Line, Ser. J.	1950-1964	\$10,665,000	2 1/8	99.37	2.61	Halsey, Stuart & Co., Inc., et al.
Ser. J.	1950-1964	8,685,000	2 3/4	99.287	2.88	Salomon Bros. & Hutzler, et al.
Baltimore & Ohio, Ser. AA.	1950-1964	4,440,000	2 1/2	99.281	2.62	Salomon Bros. & Hutzler, et al.
Cambria & Indiana, Ser. A.	1950-1959	650,000	2	99.319	2.15	Salomon Bros. & Hutzler, et al.
Chesapeake & Ohio.	1950-1959	7,000,000	2 1/8	99.533	2.23	Harriman Ripley & Co., Inc., and Lehman Bros., et al.
	1950-1959	5,150,000	2 1/8	99.562	2.23	Halsey, Stuart & Co., Inc., et al.
	1950-1964	3,990,000	2 1/8	99.131	2.26	Halsey, Stuart & Co., Inc., et al.
	1950-1964	3,600,000	2	99.117	2.13	Salomon Bros. & Hutzler, et al.
Chicago & Eastern Illinois, Ser. G.	1950-1964	1,800,000	2 5/8	99.034	2.78	Salomon Bros. & Hutzler, et al.
Chicago & North Western.	1950-1964	6,210,000	2 3/8	99.78	2.42	Harriman Ripley & Co., Inc., and Lehman Bros.
	1950-1964	6,600,000	2 3/8	99.4793	2.47	Halsey, Stuart & Co., Inc., et al.
Chicago, Burlington & Quincy.	1949-1964	3,210,000	2 1/4	99.31	2.36	Halsey, Stuart & Co., Inc., et al.
	1949-1959	2,060,000	2	99.561	2.09	Halsey, Stuart & Co., Inc.
Chicago Great Western.	1949-1962	7,020,000	2 3/4	99.613	2.82	Salomon Bros. & Hutzler, et al.
	1950-1964	6,150,000	2 3/4	99.2807	2.86	Salomon Bros. & Hutzler, et al.
Chicago, Indianapolis & Louisville.	1950-1964	4,500,000	2 3/8	99.1711	2.77	Salomon Bros. & Hutzler, et al.
Chicago, Mil., St. P. & Pac. Ser. GG.	1949-1959	4,540,000	2 1/8	99.0819	2.32	Lee Higginson Corp., et al.
Ser. HH.	1949-1964	6,060,000	2 3/8	99.473	2.46	Harriman Ripley & Co., Inc., and Lehman Bros.
Ser. JJ.	1950-1964	5,640,000	2 1/8	99.08	2.26	Harris, Hall & Co., Inc., et al.
Ser. KK.	1950-1964	4,500,000	2 1/4	99.676	2.30	Harris, Hall & Co., Inc., et al.
Chicago, Rock Is. & Pacific, Ser. C.	1949-1961	2,808,000	2 1/8	99.277	2.26	Harriman Ripley & Co., Inc., and Lehman Bros.
Ser. D.	1949-1961	3,528,000	2 1/8	99.425	2.22	Salomon Bros. & Hutzler
Ser. E.	1950-1961	3,120,000	2 1/8	99.463	2.22	Harris, Hall & Co., Inc.
Ser. F.	1950-1961	3,552,000	1 7/8	99.034	2.05	Harriman Ripley & Co., Inc.
Delaware & Hudson.	1949-1959	4,800,000	2 1/8	99.284	2.28	Lehman Bros. and White, Weld & Co.
Delaware, Lack. & Western, Ser. H.	1949-1964	3,780,000	2 1/8	99.176	2.63	Halsey, Stuart & Co., Inc., et al.
Ser. I.	1950-1964	3,150,000	2 1/8	99.0529	2.61	Halsey, Stuart & Co., Inc., et al.
Denver & Rio Grande Western, Ser. N.	1949-1964	6,900,000	2 3/8	99.158	2.50	Salomon Bros. & Hutzler, et al.
Erie.	1950-1964	2,250,000	2 1/4	99.5223	2.32	Harriman Ripley & Co., Inc., and Lehman Bros.
	1949-1958	6,300,000	2 1/4	100.117	2.23	Harriman Ripley & Co., Inc., and Lehman Bros.
	1950-1959	3,450,000	2	99.0599	2.20	First Boston Corporation, et al.
	1950-1959	4,300,000	1 7/8	99.461	1.99	Halsey, Stuart & Co., Inc., et al.
Florida East Coast, Ser. K.	1949-1959	2,060,000	2 3/4	99.294	2.90	Halsey, Stuart & Co., Inc., et al.
Illinois Central, Ser. BB.	1949-1959	6,400,000	2 1/4	99.3905	2.39	Halsey, Stuart & Co., Inc., et al.
Ser. CC.	1949-1959	6,360,000	2 1/8	99.023	2.33	Harris, Hall & Co., Inc., et al.
Ser. DD.	1949-1959	5,520,000	2 1/4	99.4715	2.36	Halsey, Stuart & Co., Inc., et al.
Indiana Harbor Belt.	1950-1959	2,050,000	2 3/8	99.519	2.49	Salomon Bros. & Hutzler, et al.
	1950-1964	2,970,000	2 3/8	99.1753	2.51	Halsey, Stuart & Co., Inc., et al.
International-Great Northern, Ser. BB.	1950-1959	1,870,000	2 1/8	99.31	2.66	Halsey, Stuart & Co., Inc., et al.
Ser. CC.	1950-1964	1,710,000	2 3/8	99.482	2.47	Halsey, Stuart & Co., Inc.
Kansas City Southern, Ser. I.	1950-1964	3,990,000	2 1/8	100.779	2.38	Halsey, Stuart & Co., Inc., et al.
Ser. J.	1950-1964	1,200,000	2 1/8	100.105	2.11	Salomon Bros. & Hutzler, et al.
Louisiana & Arkansas, Ser. D.	1950-1961	5,640,000	2 1/4	100.1599	2.22	Halsey, Stuart & Co., Inc., et al.
Missouri-Kansas-Texas.	1949-1964	1,800,000	2 1/8	99.2006	2.63	Harris, Hall & Co., Inc., et al.
	1949-1964	2,550,000	2 1/8	98.8676	2.68	Halsey, Stuart & Co., Inc., et al.
	1949-1964	2,550,000	2 3/8	98.524	2.60	Halsey, Stuart & Co., Inc., et al.
Missouri Pacific, Ser. LL.	1950-1964	4,320,000	2 1/8	99.511	2.59	Salomon Bros. & Hutzler, et al.
Ser. MM.	1950-1964	5,025,000	2 3/8	99.57	2.45	Salomon Bros. & Hutzler, et al.
Nashville, Chat. & St. Louis, Ser. E.	1950-1964	4,320,000	2 3/8	99.516	2.46	Equitable Securities Corp. and Harris, Hall & Co., Inc.
New York Central.	1950-1964	9,720,000	2 5/8	99.29	2.75	Halsey, Stuart & Co., Inc., et al.
	1950-1964	12,300,000	2 5/8	99.1126	2.78	Halsey, Stuart & Co., Inc., et al.
	1950-1964	10,725,000	2 5/8	99.2299	2.76	Halsey, Stuart & Co., Inc., et al.
	1950-1964	11,400,000	2 5/8	99.21	2.89	Harriman Ripley & Co., Inc., et al.
	1950-1964	9,120,000	2 3/4	99.5227	2.84	Halsey, Stuart & Co., Inc., et al.
New York, Chicago & St. Louis.	1950-1964	3,450,000	2	99.053	2.14	Salomon Bros. & Hutzler, et al.
New York, New Haven & Hartford.	1950-1964	2,100,000	2 1/4	98.2254	2.53	Harris, Hall & Co., Inc., et al.
Northern Pacific.	1950-1964	2,340,000	2 1/4	98.6693	2.46	Lehman Bros., et al.
	1950-1964	6,000,000	2 3/8	99.446	2.47	Harriman Ripley & Co., Inc.
	1950-1964	6,450,000	2 3/8	99.1299	2.52	Halsey, Stuart & Co., Inc., et al.
	1950-1964	3,975,000	2 1/4	99.055	2.28	Halsey, Stuart & Co., Inc., et al.
Pennsylvania, Ser. V.	1949-1963	7,965,000	2 1/8	99.802	2.55	Salomon Bros. & Hutzler, et al.
Ser. W.	1949-1963	10,005,000	2 1/8	99.76	2.55	First Boston Corp., et al.
Ser. X.	1949-1963	9,990,000	2 1/8	99.67	2.57	Halsey, Stuart & Co., Inc., et al.
	1950-1964	10,425,000	2 1/2	99.77566	2.55	Harriman Ripley & Co., Inc., and Lehman Bros., et al.
Reading, Ser. Q.	1949-1959	3,700,000	2	99.3035	2.15	Lee Higginson Corp., et al.
St. Louis, Brownsville & Mex., Ser. BB.	1950-1959	1,870,000	2 1/8	99.389	2.64	Salomon Bros. & Hutzler, et al.
Ser. CC.	1950-1964	1,020,000	2 3/8	99.643	2.44	Halsey, Stuart & Co., Inc.
St. Louis-San Francisco, Ser. D.	1950-1964	4,260,000	2 1/8	99.8166	2.54	Harris, Hall & Co., Inc., et al.
Ser. E.	1950-1964	4,080,000	2 1/8	99.5391	2.33	Halsey, Stuart & Co., Inc., et al.
Seaboard Air Line, Ser. F.	1950-1964	3,435,000	2 3/8	99.63	2.44	Salomon Bros. & Hutzler, et al.
Southern, Ser. QQ.	1949-1964	11,850,000	2 3/8	99.0413	2.52	Salomon Bros. & Hutzler, et al.
Ser. RR.	1949-1964	7,500,000	2 1/8	99.7935	2.53	Halsey, Stuart & Co., Inc., et al.
Southern Pacific, Ser. AA.	1950-1964	15,900,000	2 3/8	99.611	2.45	Harriman Ripley & Co., Inc. and Lehman Bros., et al.
Ser. BB.	1950-1964	12,480,000	2 3/8	99.062	2.53	Halsey, Stuart & Co., Inc., et al.
Ser. CC.	1950-1964	15,780,000	2 1/8	99.131	2.26	Halsey, Stuart & Co., Inc., et al.
Spokane, Portland & Seattle.	1950-1964	4,500,000	2 3/8	99.83	2.41	Halsey, Stuart & Co., Inc., et al.
Tennessee Central, Ser. F.	1949-1958	918,000	3	100.00	...	Reconstruction Finance Corp.
Texas & Pacific, Ser. G.	1950-1959	2,250,000	2	99.43	2.13	R. W. Pressprich & Co., et al.
Virginian, Ser. A.	1950-1959	2,300,000	1 3/4	99.317	1.89	Lee Higginson Corp., et al.
Wabash, Ser. B.	1950-1959	3,800,000	1 7/8	99.092	2.04	Halsey, Stuart & Co., Inc., et al.
Ser. B.	1950-1964	3,165,000	2 1/4	98.57	2.48	Halsey, Stuart & Co., Inc., et al.
Ser. B.	1950-1964	2,925,000	2	98.15	2.30	Harris, Hall & Co., Inc., et al.
Ser. B.	1950-1964	3,465,000	1 7/8	98.134	2.14	Lee Higginson Corp., et al.
Wheeling & Lake Erie, Ser. R.	1949-1959	2,120,000	2	99.505	2.10	Halsey, Stuart & Co., Inc., et al.

remarkably steady improvement for some 20 years, without making it any easier for the roads to obtain money for fixed improvements.

A partial solution might lie in the development of some plan of financing such improvements in somewhat

the same way that purchases of motive power and rolling stock are now financed, i.e., through trust certificates. Some proposals of that sort have been advanced from time to time, e.g., the article by Frederick C. Fiechter, Jr., in *Railway Age* of July 30, 1949, page 50, but to date nothing capable of definite, practical application has been developed.

Trusteeships Established in 1949

Name of Road	Mileage Operated	Long Term Debt in Hands of Public	Capital Stock in Hands of Public
Huntingdon & Broad Top	69	\$ 2,424,629	\$ 3,371,500
Mountain	376	48,784,000	none
Long Island			
Total two companies...	445	\$51,208,629	\$ 3,371,500

Railroads Removed from Trusteeship During 1949

Name of Road	Mileage Operated
Central of New Jersey	416
Duluth, South Shore & Atlantic	530
Mineral Range	24
Total	970

Mileage in the Hands of Receivers or Trustees

(Figures for 1948, inclusive, from I. C. C. Statistics for Year Ended December 31, 1948. Figures for 1949 compiled by *Railway Age*)

Year ended	Miles of road operated by receivers or trustees at close of year	Net change during year in miles of road operated	No. of roads in charge of receivers or trustees at close of year
June 30, 1894	40,819	.....	192
1895	37,856	- 2,963	169
1896	30,475	- 7,380	151
1897	18,862	-11,614	128
1898	12,745	- 6,117	94
1899	9,853	- 2,892	71
1900	4,178	- 5,675	52
1901	2,497	- 1,681	45
1902	1,475	- 1,022	27
1903	1,185	- 290	27
1904	1,323	+ 138	28
1905	796	- 527	26
1906	3,971	+ 3,176	34
1907	3,926	- 45	29
1908	9,529	+ 5,603	52
1909	10,530	+ 1,001	44
1910	5,257	- 5,273	39
1911	4,593	- 664	39
1912	9,786	+ 5,193	44
1913	16,286	+ 6,500	49
1914	18,608	+ 2,322	68
1915	30,223	+11,615	85
1916	37,353	+ 7,130	94
Dec. 31, 1916	34,804	- 2,550*	80
1917	17,376	-17,428	82
1918	19,208	+ 1,832	74
1919	16,590	- 2,618	65
1920	16,290	- 300	61
1921	13,512	- 2,778	68
1922	15,259	+ 1,747	64
1923	12,623	- 2,636	64
1924	8,105	- 4,518	61
1925	18,687	+10,582	53
1926	17,632	- 1,055	45
1927	16,752	- 880	40
1928	5,256	-11,496	33
1929	5,703	+ 447	29
1930	9,486	+ 3,783	30
1931	12,970	+ 3,484	45
1932	22,545	+ 9,575	55
1933	41,698	+19,153	78
1934	42,168	+ 470	80
1935	68,345	+26,177	87
1936	69,712	+ 1,367	91
1937	70,884	+ 1,172	109
1938	76,938	+ 6,054	109
1939	77,013	+ 75	108
1940	75,270	- 1,743	103
1941	69,859	- 5,411	91
1942	66,904	- 2,955	87
1943	64,758	- 2,146	82
1944	50,497	-14,261	76
1945	39,714	-10,783	72
1946	34,389	- 5,325	65
1947	22,750	-11,639	52
1948	13,283	- 9,467	46
1949	13,818	+ 535	46

*Represents decrease for six months.
Minor discrepancies between figures in this and other tables, and text, are due to slight variations in methods of reporting.

The Record of 1949

The ultimate and the only complete and permanent solution appears to lie in adoption of measures which will enable the railroads, as an industry, to earn, both in good years and bad, a reasonably substantial and steady profit over and above all operating costs, taxes and other charges. Because the problem has many basic causes, its solution inevitably requires many different actions by many different groups — by the railroads themselves, a determined effort to meet competition by the best service of which they are capable; by railroad employees, a realization that they have far more to gain from a prosperous, self-sufficient industry, than by any demands which tend weaken that industry; and by government and public, adoption of policies which will recognize the railroads' competitive situation and give them freedom to meet that competition.

Aside from the fact that no progress was made on

Summary of Railroad Receiverships and Trusteeships, 1876 to 1949

Roads Placed in Receiver- ship or Trusteeship				Roads Taken from Re- ceivership or Trusteeship*				Roads Placed in Receiver- ship or Trusteeship				Roads Taken from Re- ceivership or Trusteeship*			
Year	No. of roads	Miles	No. of roads	Miles	Year	No. of roads	Miles	Year	No. of roads	Miles	No. of roads	Miles	Year	No. of roads	Miles
1876	42	6,662	30	3,840	1911	5	2,606	13	1,386						
1877	38	3,637	54	3,875	1912	13	3,784	12	661						
1878	27	2,320	48	3,906	1913	17	9,020	6	1,159						
1879	12	1,102	65	4,909	1914	22	4,222	9	1,470						
1880	13	885	31	3,775	1915	12	20,143	11	3,914						
1881	5	110	29	2,617	1916	9	4,439	26	8,355						
1882	12	912	16	867	1917	19	2,486	20	10,963						
1883	11	1,990	18	1,354	1918	8	3,519	11	763						
1884	37	11,038	15	710	1919	7	244	8	459						
1885	44	8,836	22	3,156	1920	10	541	7	380						
1886	13	1,799	45	7,687	1921	14	1,744	11	4,173						
1887	9	1,046	31	5,478	1922	12	4,330	15	6,151						
1888	22	3,270	19	1,596	1923	10	2,218	8	637						
1889	22	3,803	25	2,930	1924	11	920	14	3,992						
1890	26	2,963	29	3,825	1925	6	11,368	6	638						
1891	26	2,159	21	3,223	1926	6	88	12	12,852						
1892	36	10,508	28	1,922	1927	6	924	5	142						
1893	74	29,340	25	1,613	1928	1	19	4	209						
1894	38	7,025	42	5,643	1929	3	634	5	562						
1895	31	4,089	52	12,831	1930	4	4,752	2	1,048						
1896	34	5,441	58	13,730	1931	19	5,195	2	102						
1897	18	1,537	42	6,675	1932	13	11,817	8	394						
1898	18	2,069	47	6,054	1933	18	21,222	2	298						
1899	10	1,019	32	4,294	1934	1	81	2	40						
1900	16	1,165	24	3,477	1935	16	29,018	5	436						
1901	4	73	17	1,139	1936	4	8	3	122						
1902	5	278	20	693	1937	23	1,937	2	179						
1903	9	229	13	555	1938	9	6,194	8	290						
1904	8	744	13	524	1939	3	733	4	401						
1905	10	3,593	6	679	1940	..	..	6	3,675						
1906	6	204	8	262	1941	1	25	9	5,031						
1907	7	317	6	114	1942	4	961	7	2,230						
1908	24	8,009	3	138	1943	3	23	6	394						
1909	5	859	12	2,629	1944	1	..	8	13,096						
1910	7	735	17	1,100	1945	1	96	5	10,833						
					1946	..	..	7	4,832						
					1947	2	396	14	11,535						
					1948	4	29	11	9,473						
					1949	2	445	3	970						

* Prior to 1938 these figures covered foreclosure sales only.

their dominating financial problem of obtaining capital funds for fixed plant improvement from any source except their own earnings, the railroads' 1949 financial record, while comparatively uneventful, was not unsatisfactory.

New locomotives and new freight and passenger cars—most of them ordered prior to 1949—were delivered and installed in good volume, and financed without difficulty through the medium of equipment trust certificates.

The accompanying table of representative 1949 equipment trust issues, which is not entirely complete, lists a total of nearly \$450 million of such certificates, sold at an average overall interest cost of approximately 2¼ per cent. The table lists one issue which sold at 1¾ per cent, several which sold at 1⅞ per cent and 2 per cent, and only one which required as much as 3 per cent interest. The equipment covered by the

certificates will improve railroad service or cut railroad costs, or both. If a similar amount of money could be obtained at equally low rates of interest for track improvements, roadway machinery, new signaling and communications systems, new stations, shops and yards, the railroads could further reduce their costs and improve their service to a point where competition would hold comparatively few dangers.

Property and Capitalization

The railroads began the year, as shown by another table, with their total property investment, cash and materials and supplies inventory at the highest point ever recorded—over \$30 billion for line-haul railways alone, and \$31,626,514,000 when switching and terminal companies (not included in the table) are considered. Even with depreciation deducted, the property invest-

Railroads in the Hands of Receivers or Trustees on December 31, 1949

Road	Mileage operated	Mileage owned	Date of receivership or trusteeship	Long term debt in hands of public	Capital stock in hands of public	Total securities in hands of public	Receiver's or trustee's certificates in hands of public	Principal amount of obligations in default as to principal and/or interest
Boston & Providence.....	(a)	64	Aug. 5, 1938	\$2,170,000	\$3,329,100	\$5,499,100	None	\$2,170,000
Florida East Coast.....	575	569	Sept. 1, 1931(b)	58,326,710	37,500,000	95,826,710	None	45,000,000
Georgia & Florida.....	407	363	Oct. 19, 1929	8,253,919	13,382,441	21,991,081	\$600,000	8,253,919
Georgia, Florida & Alabama.....	(c)	132	Nov. 7, 1931(d)	100,000	1,500,000	1,600,000	None	100,000
Huntingdon & Broad Top Mountain.....	69	69	Apr. 18, 1949	2,424,629	3,371,500	5,796,129	None	2,424,629
Long Island.....	376	363	Mar. 3, 1949	48,784,000	None	48,784,000	None	None
Meridian & Bigbee River.....	50	50	June 15, 1933	500,000	300,000	812,725	1,188,655	500,000
Missouri & Arkansas.....	(e)	336	Feb. 14, 1947	None	None	None	None	None
Missouri Pacific.....	7,007	6,495	Apr. 1, 1933	360,886,002	154,639,600	515,525,602	None	332,719,500
Boonville, St. Louis & Southern.....		0.18	June 1, 1936	6,000	None	6,000	None	6,000
Cairo & Thebes.....		25	Dec. 1, 1937	1,699,000	None	1,699,000	None	1,699,000
Chester & Mount Vernon.....		64	Dec. 1, 1937	None	None	None	None	None
Fort Smith Suburban.....		7	Dec. 1, 1937	None	None	None	None	None
Marion & Eastern.....		3	Dec. 1, 1937	None	None	None	None	None
Missouri Pacific RR Corp. in Nebr.....			May 1, 1933	None	None	None	None	None
Natchez & Southern.....	9	8	Dec. 1, 1937	None	None	None	None	None
New Orleans, Texas & Mexico.....	196	174	Apr. 1, 1933	40,615,900	859,800	41,475,700	None	None
Asherton & Gulf.....	32	32	Dec. 1, 1937	None	None	None	None	None
Asphalt Belt.....	18	18	Dec. 1, 1937	None	None	None	None	None
Beaumont, Sour Lake & Western.....	146	84	May 1, 1933	None	None	None	None	None
Houston North Shore.....		27	May 1, 1933	None	None	None	None	None
Houston & Brazos Valley.....	37	37	Dec. 1, 1937	None	None	None	None	None
International-Great Northern.....	1,110	1,056	Apr. 1, 1933	52,496,029	None	52,496,029	None	44,927,700
Austin Dam & Suburban.....		2(f)	Dec. 1, 1937	None	None	None	None	None
New Iberia & Northern.....	100	61	Dec. 1, 1937	None	None	None	None	None
Iberia, St. Mary & Eastern.....		40	Dec. 1, 1937	None	None	None	None	None
Orange & Northwestern.....	62	62	Dec. 1, 1937	None	None	None	None	None
Rio Grande City.....	21	21	Dec. 1, 1937	None	None	None	None	None
St. Louis, Brownsville & Mexico.....	590	560	May 1, 1933	7,426,723	None	7,426,723	None	None
San Antonio Southern.....	45	29	Dec. 1, 1937	None	None	None	None	None
San Antonio, Uvalde & Gulf.....	317	314	May 1, 1933	None	None	None	None	None
San Benito & Rio Grande Valley.....	117	116	Dec. 1, 1937	None	None	None	None	None
Sugar Land.....	42	19	Dec. 1, 1937	None	None	None	None	None
New Jersey & New York.....	39	29	June 30, 1938	1,022,960	366,400	1,389,360	None	1,022,960
New York, Ontario & Western.....	544	340	May 20, 1937	38,932,118	58,114,043	97,046,161	None	35,484,118
Ellenville & Kingston.....		28	Nov. 4, 1948	None	None	None	None	None
Ontario, Carbondale & Scranton.....		68	Nov. 4, 1948	None	None	None	None	None
Port Jervis, Monticello & Summitville.....		38	Nov. 4, 1948	None	None	None	None	None
New York, Susquehanna & Western.....	120	120	June 1, 1937	12,866,999	None	12,866,999	None	12,345,608
Rio Grande Southern.....	172	172	Dec. 16, 1929	2,728,000	934,700	3,662,700	60,000	2,728,000
Rutland.....	407	393	May 5, 1938(g)	9,216,000	9,080,300	18,296,300	None	9,216,000
Smoky Mountain.....	31	29	Mar. 20, 1947(h)	None	75,000	75,000	None	None
Tallulah Falls.....	57	57	June 25, 1923	None	None	None	74,070	None
Waco, Beaumont, Trinity & Sabine.....	42	42	Feb. 8, 1930	330,000	1,113,000	1,443,000	12,734	None
Wisconsin Central.....	1,051	906	Dec. 2, 1932(i)	40,780,345	17,032,700	57,813,045	None	38,119,000
Wyoming.....	29	29	Feb. 28, 1948(j)	None	None	None	None	None

(a) Operated by the New York, New Haven & Hartford.

(b) Changed to trusteeship April 21, 1941.

(c) Operated by Seaboard Air Line.

(d) Changed to trusteeship July 12, 1944.

(e) Operations ceased Sept. 1946.

(f) Yard switching tracks.

(g) Changed to trusteeship June 21, 1944.

(h) Changed to receivership July 16, 1948.

(i) Changed to trusteeship Oct. 1, 1944.

(j) Changed to trusteeship July 9, 1948.

Note:—The effort has been made, in the above table, to list only those securities of bankrupt carriers which are actually in the hands of the investing public—and to exclude securities of one carrier held by an affiliated carrier. Where securities are held by other railways not affiliated with the issuing company, however, they are included in the above list as publicly held. Owing to the complexities of some corporate structures, the decision as to the fact of public or other-carrier ownership has perforce, in some instances, been arbitrary. The purpose has been to give a general picture of the public stake in bankrupt carriers rather than a comprehensive tabulation of legal obligations.

ment of line-haul railways at the beginning of 1949 was well over \$24 billion, and of all railways over \$25 billion.

Standing against this in the hands of the public, for line-haul companies, were less than \$15.5 billion of securities — in round figures, \$7 billion of stock and \$8.5 billion of bonds, equipment trust certificates and other types of funded debt. At the beginning of the year, therefore, because the railroads, partly from necessity, have consistently plowed back earnings into property, each par-value dollar of publicly owned line-haul railroad stock represented \$2.26 of line-haul railway property, even on the basis of its depreciated value:

Total property investment, Class I, II and III line-haul steam railways	\$30,463,378,000
Accrued depreciation and amortization of defense projects	6,279,892,000
Depreciated property value	\$24,183,486,000
Less: Funded debt in hands of public	8,551,945,000
Depreciated value of property represented by stock in hands of public	\$15,631,541,000
Stock in hands of public	6,915,155,000

The amount of railroad stock owned by the public at the beginning of 1949, continuing the generally downward trend which has existed since 1929, was lower than in any year since 1927. Funded debt, on the other hand, increased by about 3 per cent over the amount outstanding at the beginning of 1948, largely due to the volume of equipment trust certificates sold in 1948. Outstanding debt, however, was still lower than in any other year on record except 1946 and 1947. Since total property investment during 1948 increased by more than \$1 billion, and more than kept pace, percentage-wise, with the increase in debt, the fundamental financial position of the railroad industry, as measured by capitalization and investment, would appear to have been even sounder at the beginning of 1949 than at any previous time since figures have been available.

The volume of equipment trust financing in 1949 indicates that funded debt owned by the public may show still another increase during 1949, when all figures are available. But when retirement of earlier certificates is considered, the overall increase will probably turn out to have been comparatively modest, and to have been more than balanced by increased property investment represented by the equipment covered by 1949 certificates, and by other improvements financed from earnings.

Receiverships and Reorganizations

There was little change either in the number of companies or in total mileage in the hands of receivers during 1949. The Long Island, largely dependent on low-priced commuter traffic for its revenues, and burdened with high metropolitan costs and high suburban taxes, went into trusteeship early in the year, as did the historic Huntingdon & Broad Top Mountain. On the other hand, the Central of New Jersey, the Duluth, South Shore & Atlantic, and the latter's subsidiary, the Mineral Range, their reorganizations completed, emerged from receivership late in the year.

The Lehigh Valley and the Macon, Dublin & Savannah completed readjustment of their securities under the so-called Mahaffie Act; the Boston & Maine, the Maine Central and some other roads made progress

on plans to readjust their securities under the same act; and the Bangor & Aroostook and Missouri-Kansas-Texas began proceedings, still under the same law, to modify their debt and to fund unpaid interest, respectively. The Illinois Central and the Chicago, Rock Island & Pacific undertook, respectively, to refund and to refinance their outstanding indebtedness.

Changes of Control

The year also brought changes in control of several lines. Early in 1949, the St. Louis-San Francisco took over the Alabama, Tennessee & Northern; while on December 1 the New York, Chicago & St. Louis leased the Wheeling & Lake Erie for a term of 99 years. The Atchison, Topeka & Santa Fe, the Chicago, Burlington & Quincy and the Pennsylvania sought joint authority to purchase control of the Illinois Northern; the Rock Island was authorized to take over the Pullman, and at the end of the year, the P.R.R. and the Wabash had pending an application to secure control of the Detroit, Toledo & Ironton, and had secured a favorable examiner's report.

A number of companies sought, and in many cases obtained, Interstate Commerce Commission approval to absorb various minor subsidiaries heretofore operated under lease or other arrangements, with a view in most cases to eliminating the expense of maintaining separate corporations. Among the companies asking for (and in most cases receiving) such authority were the Baltimore & Ohio, the Bessemer & Lake Erie, the B. & M., the Chicago, Milwaukee, St. Paul & Pacific, the Gulf, Colorado & Santa Fe, the Gulf, Mobile & Ohio, the L. V., the Panhandle & Santa Fe, the P. R. R., the Reading, the Southern, the St. L.-S. F. and the Western Maryland.

On the other hand, reversing the trend toward consolidation, several new companies were organized, and others were reorganized or resumed independent operation. Most important in this group was the Atlantic & Danville, which returned to separate operation of its 200-mi. line operated under lease by the Southern since 1899. The Sanford & Eastern took over the Rochester, N. H.-Westbrook, Me., line of the B. & M., and the Helena & Northwestern began operation of a segment of the abandoned Missouri & Arkansas. The Kansas City & Brookfield was organized under Burlington auspices in connection with the latter's development of a new and shorter line between Chicago and Kansas City, Mo.

Security Issues

As previously stated, the railroads during 1949 sold in substantial volume and at low interest rates equipment trust certificates. New stock financing, however, was virtually non-existent.

Bond issues in 1949 were fewer in number than for the several years preceding, and represented, for the most part, refunding or refinancing operations rather than new capital. Among such issues were the following:

In July, the **Baltimore & Ohio** and the **Pennsylvania** were jointly authorized to assume liability, as guarantors, for \$2,000,000 of series A first mortgage 4½ per cent bonds of the **Akron Union Passenger Depot**. These bonds, proceeds of which will be applied toward construction of a new

station at Akron, Ohio, mature July 1, 1974. They were sold to Halsey, Stuart & Co., at 98.10, making the average annual interest cost approximately 4.63 per cent, and were reoffered to the public at 100. For sinking fund purposes, they will be redeemable at 102 between July 1, 1951, and July 1, 1956, and at progressively lower prices down to par after July 1, 1971. Redemption prices for other purposes begin at 104 between July 1, 1951, and January 1, 1957, and range downward to par after July 1, 1972.

In November, the Chicago, Rock Island & Pacific was authorized to issue \$25,760,000 of series B first mortgage 3½ per cent bonds, to be pledged as part of the collateral for a like amount of promissory notes issued to various banks as evidence of loans to be applied toward redemption, on January 1, 1950, at 104½ plus accrued interest, of the same principal amount of the road's series A first mortgage 4 per cent bonds. The transaction has been described as the "first step" in refinancing all the Rock Island's outstanding indebtedness. The bonds were authorized only as collateral and not for immediate public sale. Premiums on the bonds to be refunded were to be paid out of funds in the road's treasury.

In March, the City of New Orleans was authorized to sell \$15,000,000 of bonds to finance in part the construction there of a new union passenger terminal and related improvements, on which work has recently been started. The bonds will mature serially in varying amounts on January 1 of each year between 1953 and 1998, inclusive, and bear interest at rates ranging from 4 per cent from 1953 to 1956, inclusive, down to 2 per cent from 1988 to final maturity. The authorization included approval of a bid by R. S. Hecht & Co. and 24 associates for a selling price of 100.28, making the average annual interest cost approximately 2.57 per cent.

In October, as part of what was probably the year's major railroad debt refunding operation, the Illinois Central was authorized to issue a total of \$52,201,000 of consolidated mortgage bonds, consisting of series A, \$10,378,000, series B, \$12,686,000, both due November 1, 1979, and series C, \$29,137,000, due November 1, 1974. Interest on the A and B bonds will be 4½ per cent and 5½ per cent, respectively, up to November 1, 1955, the maturity date of outstanding 4 and 5 per cent issues for which they were to be exchanged in like principal amounts, and 3¾ per cent after that date. Interest on the C bonds, which will be exchanged, along with cash payments, for other outstanding bonds maturing between 1951 and 1953, will be 3¾ per cent.

In August, the Wheeling & Lake Erie was authorized to issue and sell \$6,870,000 of series B general and refunding mortgage 2¾ per cent bonds, and to issue nominally \$4,000,000 of similar bonds, series C. Proceeds from sale of series B, which mature August 15, 1974, were to be used toward payment of a like amount of first consolidated mortgage 4 per cent bonds due September 1, 1949. The authorization included approval of a bid of 98.132 by Halsey, Stuart & Co. and one associate, making the average annual interest cost approximately 2.86 per cent. Reoffering price to the public was 98.875. The B bonds are redeemable for sinking fund purposes on any interest-payment date, and for other purposes at any time prior to maturity at prices ranging from 101½ during the issue's first year to par during its last. The series C bonds, for which no sinking fund was established, are redeemable for other purposes on the same basis as the B series. Their issuance was authorized to make them available to the New York, Chicago & St. Louis upon the effective date (December 1, 1949) of its lease of the Wheeling, for the purpose of paying a \$5,000,000 Wheeling note to the Chase National Bank of New York, or, upon further authorization, to enable the Nickel Plate to obtain reimbursement of balances due it by the W. & L. E. Upon consummation of the lease, the Nickel Plate was authorized to assume liability for both series of bonds.

Dividend Changes

The following list includes most of the major changes in railroad dividend payments—almost equally divided between increases and decreases—during 1949:

The AKRON, CANTON & YOUNGSTOWN paid \$3 per share on its common stock in 1949, compared with \$3.50 in 1948 and \$1.50 in 1947.

The ATLANTA & WEST POINT paid \$1 per common share in 1949, compared with \$4 in 1948 and \$2 in 1947.

The BALTIMORE & OHIO, which, in 1948, paid \$1 per share on its 4 per cent non-cumulative preferred stock—the first dividend on that issue since 1932—made no payment in 1949, but did declare, late in the year, a \$1 per share dividend on this issue, payable on January 25, 1950, for the year 1949.

The CENTRAL OF GEORGIA, which, in 1948, paid \$5 per share on its 5 per cent preferred Class A and B voting trust certificates, made no payment in 1949. The 1948 payment applied to the year 1945, under terms of the road's plan of reorganization.

The CHICAGO & NORTH WESTERN omitted 1949 dividends on both its common and preferred stocks, on which it paid \$2 and \$5 per share, respectively, in 1948.

The CHICAGO, BURLINGTON & QUINCY reduced its capital stock dividends from \$7 per share in 1948 and \$6 in 1947 to \$5 per share in 1949.

The CHICAGO GREAT WESTERN paid in 1949 31¼ cents per share on its 5 per cent preferred stock, on which nothing was paid in 1948.

The CHICAGO SOUTH SHORE & SOUTH BEND paid \$1 per share of common stock in 1949, against 90 cents in 1948.

The COLUMBIA, NEWBERRY & LAURENS, which paid in 1948 its first capital stock dividend since 1931—\$2 per share—made no payment in 1949.

The ERIE, after paying \$1.50 per share of common in 1948, went back in 1949 to its 1946 and 1947 payment of \$1 per share.

The GREAT NORTHERN increased disbursements on its \$6 preferred stock from \$3 in 1947 and \$3.50 in 1948 to \$4 in 1949.

The ILLINOIS TERMINAL, increasing its quarterly dividend rate from 18 to 20 cents, paid 80 cents per share of common stock in 1949 against 72 cents in 1948 and 1947.

The INTERNATIONAL OF CENTRAL AMERICA, which experienced severe flood conditions in Guatemala in October, paid \$2.50 per share on its 5 per cent cumulative preferred stock, making 1949 the first recent year in which dividend requirements on this issue have not been covered and arrearages—currently \$31 per share—reduced.

The KANSAS CITY SOUTHERN, which, in 1948, paid its first common stock dividend in 17 years—\$1 per share—increased its payments to \$4 per share in 1949.

The LAKE SUPERIOR & ISHPEMING and the MINNEAPOLIS & ST. LOUIS each reduced their capital stock dividends by 25 cents—the L. S. & I. from \$1.50 in 1948 to the 1946 and 1947 level of \$1.25 in 1949, and the M. & St. L. from \$1.25 in 1948 and 1947 to \$1 in 1949.

The NASHVILLE, CHATTANOOGA & ST. LOUIS paid \$2 per common share in 1949, compared with \$3 in 1948 and nothing in 1947.

The NEW LONDON NORTHERN (Central Vermont lessor) paid two extra dividends, totaling 50 cents, on its common stock, bringing total disbursements to \$7.50 per share in 1949 against \$7 in 1948.

The NEW YORK CENTRAL, early in 1949, paid a capital stock dividend of 50 cents per share, declared in 1948 out of 1948 earnings. Nothing was paid in 1947, and no action has been taken to date on subsequent dividends.

The NEW YORK, CHICAGO & ST. LOUIS paid in 1949 a total of \$13.50 per share, including dividends in arrears, on its 6 per cent preferred stock, an increase of \$4.50 over the \$9 paid in 1948. The 1949 dividends reduced arrearages on this issue to \$73.50 per share as of December 31. This amount will be further reduced to \$68.50 per share after payment of a regular \$1.50 dividend on January 3, 1950, and a dividend of \$5 on arrears on February 1, 1950, to stock of record January 16.

The NORFOLK SOUTHERN increased its common stock dividends by 75 cents a share, from \$2.25 in 1948 to \$3 in 1949.

The NORTHERN PACIFIC paid \$1.50 per share of capital stock in 1949, an increase of 50 cents over disbursements of \$1 per share in 1947 and 1948.

The PENNSYLVANIA paid 75 cents per share of capital stock in 1949, a reduction of 25 cents compared with 1948 but an increase of the same amount over 1947.

The PITTSBURGH & LAKE ERIE paid \$4 per share on its common stock in 1949, against \$8 in 1948 and \$6 in 1947.

The PITTSBURGH & WEST VIRGINIA, after disbursing in 1948 its first common stock dividend since 1931—\$1 per share—made no payment in 1949.

The READING, maintaining the increased quarterly dividend rate established in mid-1948, paid a total of \$2 per common share, against \$1.50 in 1948 and \$1 in 1947.

The ST. LOUIS-SAN FRANCISCO paid an initial dividend of \$1 per share on its common stock.

The SEABOARD AIR LINE, which paid in 1948 an initial dividend of \$1 per share on its common voting trust certificates, maintained that payment and also declared a 50-cent extra dividend in 1949, for a total disbursement during the year of \$1.50.

The SOUTHERN and SOUTHERN PACIFIC, both maintaining increased quarterly dividend rates established in 1948, paid 1949 dividends of \$4 and \$5, respectively, on their common shares. This represented an increase of 75 cents for the Southern, and 50 cents for the S. P.

The UNION PACIFIC paid \$6 per share of common in 1949, against 1948 payments equivalent, after adjustment for the company's 2-for-1 stock split, to \$6.50 per share of present stock.

The WABASH paid \$1 per common share in 1949, against \$2.50 in 1948.

The WATERLOO, CEDAR FALLS & NORTHERN paid 50 cents per share of common stock in 1949. The 1948 payments, adjusted for the company's 3-for-1 stock split, were equivalent to 35 cents per share on present stock; hence, 1949 disbursements represented an increase of 15 cents per current share.

The WESTERN OF ALABAMA in 1949 paid dividends of \$3.75 per share on its capital stock, against \$7 per share in 1948.

The WHEELING & LAKE ERIE increased its common stock dividends from \$3 in 1947 and \$4.37½ in 1948 to a total of \$7.79¼ in 1949.

LOCOMOTIVES ORDERED in 1949

By FRED C. MILES
Associate Editor

Motive power ordered in the United States in 1949 included 15 steam locomotives (including 2 for export), 1,888 Diesel locomotive units (including 103 for export), and 20 electric locomotives (including 10 for export), according to reports received by *Railway Age*. All domestic orders for steam locomotives were placed by the Norfolk & Western with its own shops. American railroads ordered 1,699 Diesel units, and 86 such units were ordered by domestic industrial concerns and private car lines. Diesels are reported again this year as individual units rather than as locomotives, because many railroads change the arrangement of units in road locomotives to meet varying conditions.

The accompanying detailed list of locomotive orders

by purchaser was compiled from reports to *Railway Age* by contract locomotive builders, railroads, private car lines and industrial concerns. Where orders for Diesel power were reported in terms of complete locomotives, rather than as units, they are so listed, as indicative of the manner in which the purchaser intends to use the power. However, each such order for a complete locomotive was divided into its component units when compiling totals for the two smaller tables.

Diesel Locomotive Units Ordered in 1949 By Horsepower and Purchaser

Horsepower	Railroads	Private Car Lines and Others	For Export	Total
2,500	11	0	0	11
2,250	37	0	0	37
2,000	59	0	0	59
1,600	25	0	0	25
1,500	843	0	7	850
1,350	0	0	10	10
1,200	170	0	0	170
1,050	0	0	4	4
1,000	440	2	5	447
750	26	1	1	28
675	0	0	6	6
660	12	0	0	12
650	0	1	0	1
600	65	12	26	103
480	0	1	0	1
470	4	10	5	19
400	6	1	3	10
380	0	4	3	7
376	0	0	0	0
300	0	26	4	30
200	0	0	0	0
190	0	5#	4†	9
150	0	23	10	33
130	1*	0	0	1
113	0	0	4*	4
74	0	0	0	0
70	0	0	1*	1
35	0	0	10*	10
Total	1,699	86	103	1,888

† D-Hydraulic
* Diesel-Mech.
2 are D-Hydraulic.

Locomotives Ordered, 1929-1948

Year	Steam	Diesel	Electric	Total	U.S. Export
1949	13	1,785*	10	1,808	115
1948	54	2,661*	2	2,717	435
1947	79	2,149	1	2,229	655
1946	55	989	8	1,052	629
1945	148	691	6	845	1,985
1944	74	680	3	757	134
1943	413	635	0	1,048	60
1942	363	894	12	1,269	32
1941	302	1,104	38	1,444	85
1940	207	492	13	712	40
1939	119	249	32	400	24
1938	36	160	29	225	56
1937	173	145	36	354	22
1936	435	77	24	536	15
1935	30	60	7	97	17
1934	72	37	76	185	1
1933	17	25	0	42	12
1932	5	7	0	12	174
1931	62	21	91	421	20
1930	382	18	21	421	106
1929	1,055	80	95	1,230	

Note: U. S. Government purchases excluded for years 1942-1944.
*1949 and 1948 Diesel orders are shown in units; Diesel orders for previous years are shown in locomotives, which may include one or more units.

STEAM LOCOMOTIVES ORDERED IN 1949

For Service in the United States

Purchaser	No.	Type	Service	Weight Lb.	Tractive Force	Cylinders	Date of Order	Date of Delivery	Builder
Norfolk & Western	3	4-8-4	Passenger	494,000	80,000	27x32	February	2nd qtr. '50	R. R. Shops
	3	2-6-6-4	Freight	573,000	114,000	24x30(4)	February	2nd qtr. '50	R. R. Shops
	7	2-8-8-2	Freight	582,900	152,206 Simple 126,838 & Compound	25x32(2) 39x32(2)	February	2nd qtr. '50	R. R. Shops

For Export

Purchaser	No.	Type	Service	Weight Lb.	Tractive Force	Cylinders	Date of Order	Date of Delivery	Builder
E. F. Dona Teresa Cristina (Brazil)	2	2-6-6-2	Freight	164,000	30,700	14x22(4)	January	.....	Baldwin

DIESEL, ELECTRIC AND OTHER INTERNAL COMBUSTION LOCOMOTIVES

Railroad Orders—For Service in the United States

Purchaser	No.	Wheel Arrangement	Service	Type	Weight Lb.	Horse- power	Date of Order	Date of Delivery	Builder Locomotive Builder Electrical Equipment Engine Builder
Akron, Canton & Youngstown	1	B-B	Switching	Diesel-Elec.	240,000	1,500	March	June	Fairbanks, Morse-West.
Arkansas & Louisiana Missouri	1	B-B	Rd.-Sw.	Diesel-Elec.	248,000	1,000	May	November	Electro-Motive
Aroostook Valley	1	B-B	Switching	Diesel-Elec.	88,000	400	May	September	G. E.-Cater.
Atchison, Topeka & Santa Fe	20	4(B-B)	Freight	Diesel-Elec.	920,000	6,000	September	1950	Electro-Motive
Atlanta & St. Andrews Bay	1	B-B	Rd.-Sw.	Diesel-Elec.	238,000	1,000	January	1st qtr. '50	American-G. E.
Atlanta & West Point—Western of Alabama	2	B-B	All Purpose	Diesel-Elec.	227,000	1,500	January	March '50	Electro-Motive
	2	B-B	Switching	Diesel-Elec.	235,000	1,000	January	April	Baldwin-West.
Atlantic Coast Line	5	A1A-A1A	Passenger	Diesel-Elec.	316,500	2,250	October	.....	Electro-Motive
	36	B-B	Freight	Diesel-Elec.	230,000	1,500	October	.....	Electro-Motive
	9	B-B	Switching	Diesel-Elec.	248,000	1,200	October	.....	Electro-Motive
	23	B-B	All Purpose	Diesel-Elec.	227,000	1,500	October	.....	Electro-Motive
Baltimore & Ohio	10	B-B	Switching	Diesel-Elec.	240,000	1,000	September	Jan. '50	Lima-Hamilton-West.
Bath & Hammondsport	1	B-B	Switching	Diesel-Elec.	88,000	400	February	September	G. E.-Cater.
Belt of Chicago	4	B-B	Freight	Diesel-Elec.	496,000	2,000	July	1949-50	Electro-Motive
	9	B-B	Switching	Diesel-Elec.	230,000	1,000	July	Feb. '50	American-G. E.
	9	B-B	Rd.-Sw.	Diesel-Elec.	230,000	1,500	July	December	American-G. E.
Birmingham Southern	1	B-B	Switching	Diesel-Elec.	232,000	1,500	June	October	American-G. E.
Boston & Maine	1	B-B	Freight	Diesel-Elec.	230,000	1,500	September	October	Electro-Motive
Central of Georgia	5	B-B	Freight	Diesel-Elec.	246,780	1,500	May	July	Fairbanks, Morse-West.
	2	B-B	Switching	Diesel-Elec.	230,900	1,000	May	Aug.-Oct.	Baldwin-West.
Central Indiana	1	B-B	Switching	Diesel-Elec.	198,000	600	April	.....	Electro-Motive
Chesapeake & Ohio	53	B-B	Switching	Diesel-Elec.	220,200	1,000	May	1949-'50	American-G. E.
	20	B-B	Switching	Diesel-Elec.	239,000	1,000	June	1949	Electro-Motive
	2	3(B-B)	Switching	Diesel-Elec.	750,000	3,000	May	1949	Electro-Motive
	20	B-B	Switching	Diesel-Elec.	260,000	1,500	May	1950	Electro-Motive
	14	B-B	Switching	Diesel-Elec.	240,000	1,000	May	Aug.-Nov.	Electro-Motive
	26	B-B	Switching	Diesel-Elec.	240,000	1,200	May	1950	Electro-Motive
Chicago & Eastern Illinois	10	B-B	Switching	Diesel-Elec.	258,000	1,500	February	Aug.-Sept.	Electro-Motive
	4	B-B	Switching	Diesel-Elec.	248,000	1,000	February	November	Electro-Motive
	6	B-B	Switching	Diesel-Elec.	248,000	1,200	August	1950	Electro-Motive
	20	B-B	Rd.-Sw.	Diesel-Elec.	248,000	1,500	August	1950	Electro-Motive
Chicago & North Western	45	B-B	Freight	Diesel-Elec.	230,000	1,500	February	Oct.-Dec.	Electro-Motive
	2	B-B	Transfer	Diesel-Elec.	496,000	2,000	February	October	Electro-Motive
	4	B-B	Switching	Diesel-Elec.	246,000	1,500	February	December	Fairbanks, Morse
	5	C-C	Rd.-Sw.	Diesel-Elec.	290,000	1,500	February	July	Baldwin-West.
Chicago & Western Indiana	13	B-B	Rd.-Sw.	Diesel-Elec.	251,200	1,000	September	1949-50	American-G. E.
Chicago, Burlington & Quincy	7	A1A-A1A	Pass.	Diesel-Elec.	316,500	2,250	February	1950	Electro-Motive
Chicago Great Western	8	B-B	Transfer	Diesel-Elec.	496,000	2,000	January	.....	Electro-Motive
	7	B-B	Freight	Diesel-Elec.	230,000	1,500	March	.....	Electro-Motive
	1	B-B	Switching	Diesel-Elec.	248,000	1,000	March	.....	Electro-Motive
Chicago Heights Terminal Transfer	2	B-B	Switching	Diesel-Elec.	248,000	1,000	August	Aug. '50	Electro-Motive
Chicago, Milwaukee, St. Paul & Pacific	6	B-B	Switching	Diesel-Elec.	.....	1,000	July	1950	Fairbanks, Morse
	1	B-B	Switching	Diesel-Elec.	246,000	1,000	July	August	Fairbanks, Morse
	1	B-B	Transfer	Diesel-Elec.	496,000	2,000	March	.....	Electro-Motive
	10	B-B	Freight	Diesel-Elec.	230,000	1,500	March	.....	Electro-Motive
	6	3(B-B)	Freight	Diesel-Elec.	690,000	4,500	August	.....	Electro-Motive
	4	B-B	Switching	Diesel-Elec.	235,000	1,000	August	October	Baldwin-West.
Chicago, Rock Island & Pacific	10	B-B	Switching	Diesel-Elec.	198,000	600	February	July	Electro-Motive
Chicago, St. Paul, Minneapolis & Omaha	6	B-B	Freight	Diesel-Elec.	230,000	1,500	February	December	Electro-Motive
Chicago South Shore & South Bend	3*	2D+D2	Freight	Electric	546,000	5,110	May	May	General Electric
Cincinnati Union Terminal	2	B-B	Switching	Diesel-Elec.	217,000	750	September	November	Lima-Hamilton-West.
Clinchfield	1	B-B	Freight	Diesel-Elec.	230,000	1,500	February	.....	Electro-Motive
Columbia & Cowlitz	1	B-B	Switching	Diesel-Elec.	246,000	1,000	January	June	Fairbanks, Morse-West.
Conemaugh & Black Lick	3	B-B	Switching	Diesel-Elec.	248,000	1,000	February	.....	Electro-Motive
	5	B-B	Switching	Diesel-Elec.	248,000	1,200	February	.....	Electro-Motive
	3	B-B	Switching	Diesel-Elec.	248,000	1,200	June	.....	Electro-Motive
	2	B-B	Switching	Diesel-Elec.	198,000	600	September	.....	Electro-Motive
Duluth, South Shore & Atlantic	3	C-C	Freight	Diesel-Elec.	360,000	2,000	May	October	Baldwin-West.
	3	C-C	Rd.-Sw.	Diesel-Elec.	325,000	1,500	May	October	Baldwin-West.
East Jersey R. R. & Terminal	2	B-B	Switching	Diesel-Elec.	130,000	470	November	Feb. '50	G. E.-Cummins
Elgin, Joliet & Eastern	6	B-B	Freight	Diesel-Elec.	249,000	1,500	July	November	American-G. E.
Erie	4	B-B	Switching	Diesel-Elec.	240,000	1,000	February	October	Lima-Hamilton-West.
	1	B-B	Switching	Diesel-Elec.	201,000	600	June	1950	American-G. E.
	2	B-B	Pass.-Sw.	Diesel-Elec.	206,200	2,000	May	November	American-G. E.
	2	B-B	Pass.-Sw.	Diesel-Elec.	244,300	1,500	March	November	American-G. E.
	3	B-B	Pass.-Sw.	Diesel-Elec.	245,000	1,500	May	November	American-G. E.
	5	B-B	Frt.-Sw.	Diesel-Elec.	234,700	1,500	May	Nov.-Dec.	American-G. E.
	1	4(B-B)	Freight	Diesel-Elec.	920,000	6,000	March	Jan. '50	Electro-Motive
	5	B-B	Switching	Diesel-Elec.	235,000	1,000	February	July	Baldwin-West.
	1	B-B	Switching	Diesel-Elec.	235,000	1,000	May	September	Baldwin-West.
	6	B-B	Frt.-Sw.	Diesel-Elec.	240,000	1,500	May	Nov.-Dec.	Baldwin-West.
	1	B-B	Frt.-Sw.	Diesel-Elec.	325,000	1,500	November	Mar. '50	Baldwin-West.
Galveston Wharves	2	B-B	Switching	Diesel-Elec.	198,000	600	July	.....	Electro-Motive
Georgia	1	B-B	Passenger	Diesel-Elec.	258,000	1,500	April	April '50	Electro-Motive
	1	B-B	Rd.-Sw.	Diesel-Elec.	248,000	1,500	April	April '50	Electro-Motive
	1	B-B	Switching	Diesel-Elec.	235,000	1,000	February	May	Baldwin-West.
Georgia & Florida	4	B-B	Rd.-Sw.	Diesel-Elec.	248,000	1,500	September	.....	Electro-Motive
	3	B-B	Switching	Diesel-Elec.	140,000	600	March	November	G. F.-Cooper-Bess.
Great Northern	10	B-B	Switching	Diesel-Elec.	245,000	1,000	1949	June '50	American-G. E.
	2	B-B	Rd.-Sw.	Diesel-Elec.	245,000	1,500	1949	Mar. '50	American-G. E.
	8	B-B	Rd.-Sw.	Diesel-Elec.	250,000	1,500	1949	Dec. '50	American-G. E.
	2	2(B-B)	Freight	Diesel-Elec.	470,000	3,000	1949	Oct. '50	American-G. E.
	1	3(B-B)	Freight	Diesel-Elec.	705,000	4,500	1949	Oct. '50	American-G. E.
	12	B-B	Switching	Diesel-Elec.	248,000	1,000	January	.....	Electro-Motive
	8	B-B	Freight	Diesel-Elec.	230,000	1,500	January	.....	Electro-Motive
	2	B-B	Freight	Diesel-Elec.	230,000	1,500	August	.....	Electro-Motive
	20	B-B	Freight	Diesel-Elec.	230,000	1,500	September	.....	Electro-Motive
	8	B-B	Switching	Diesel-Elec.	248,000	1,200	September	.....	Electro-Motive
	3	B-B	Switching	Diesel-Elec.	198,000	600	September	.....	Electro-Motive
	11	B-B	Freight	Diesel-Elec.	230,000	1,500	October	.....	Electro-Motive
Green Bay & Western	1	B-B	Switching	Diesel-Elec.	198,000	600	October	.....	Electro-Motive
	4	B-B	Freight	Diesel-Elec.	148,000	1,500	November	Jan.-Feb. '50	American-G. E.

Purchaser	No.	Wheel Arrange- ment	Service	Type	Weight Lb.	Horse- power	Date of Order	Date of Delivery	Builder Locomotive Builder Electrical Equipment Engine Builder
Gulf, Mobile & Ohio	1**	A1A-A1A	Passenger	Diesel-Elec.	310,000	2,000	Nov. '48	March	American-G. E.
	6	B-B	Rd.-Sw.	Diesel-Elec.	230,000	1,500	February	Sept.-Oct.	American-G. E.
	4	B-B	Freight	Diesel-Elec.	223,000	1,500	February	September	American-G. E.
	10	B-B	Freight	Diesel-Elec.	230,000	1,500	February	September	Electro-Motive
Illinois Central	2	B-B	Transfer	Diesel-Elec.	496,000	.....	February	December	Electro-Motive
	29	B-B	Switching	Diesel-Elec.	248,000	.....	February	1950	Electro-Motive
Illinois Terminal	6	B-B	Switching	Diesel-Elec.	230,000	1,000	January	Feb. '50	American-G. E.
	3	B-B	Rd.-Sw.	Diesel-Elec.	243,000	1,000	January	Feb. '50	American-G. E.
Indiana Harbor Belt	27	B-B	Switching	Diesel-Elec.	248,000	1,200	July	May '50	Electro-Motive
Indianapolis Union	4	B-B	Switching	Diesel-Elec.	246,000	1,000	March	August	Fairbanks, Morse-West.
Ironton	1	B-B	Switching	Diesel-Elec.	235,000	1,000	January	July	Baldwin-West.
Jacksonville Terminal	4	B-B	Switching	Diesel-Elec.	248,000	1,000	June	.....	Electro-Motive
Kansas City Southern	2	3(B-B)	Freight	Diesel-Elec.	690,000	4,500	May	.....	Electro-Motive
	1	B-B	Passenger	Diesel-Elec.	230,000	1,500	May	.....	Electro-Motive
	5	B-B	Switching	Diesel-Elec.	248,000	1,000	May	.....	Electro-Motive
Kelley's Creek & Northwestern	1	B-B	Switching	Diesel-Elec.	140,000	600	August	November	G. E.-Cooper-Bess.
Lehigh Valley	2	4(B-B)	Freight	Diesel-Elec.	920,000	6,000	June	Feb. '50	Electro-Motive
	1	B-B	Switching	Diesel-Elec.	248,000	1,200	November	Jan. '50	Electro-Motive
	3	B-B	Rd.-Sw.	Diesel-Elec.	230,000	1,500	December	Mar. '50	American-G. E.
	5	B-B	Switching	Diesel-Elec.	235,000	1,000	November	Jan. '50	Baldwin-West.
Long Island	8	B-B	Passenger	Diesel-Elec.	282,000	2,000	August	1950	Fairbanks, Morse-West.
	4	B-B	Switching	Diesel-Elec.	.....	1,000	August	.....	American-G. E.
	4	B-B	Freight	Diesel-Elec.	.....	1,000	August	.....	American-G. E.
Louisiana & Arkansas	2	B-B	All Purpose	Diesel-Elec.	246,000	1,500	April	May	Fairbanks, Morse-West.
Louisville & Nashville	1	B-B	Switching	Diesel-Elec.	140,000	600	September	November	G. E.-Cooper-Bess.
Manitou & Pikes Peak	2	B	Passenger	Diesel-Elec.	44,000	400	January	April '50	General Electric
Minneapolis, Northfield & Southern	1	B-B	Rd.-Sw.	Diesel-Elec.	235,000	1,500	November	.....	Baldwin-West.
Minneapolis, St. Paul & Sault Ste. Marie	6	2(B-B)	Freight	Diesel-Elec.	466,000	3,000	April	July-Aug.	American-G. E.
	4	A1A-A1A	Rd.-Sw.	Diesel-Elec.	242,500	1,500	April	July-Nov.	American-G. E.
	2	B-B	Rd.-Sw.	Diesel-Elec.	243,500	1,000	April	1950	American-G. E.
	2	B-B	Switching	Diesel-Elec.	230,000	1,000	April	December	American-G. E.
Missouri-Illinois	1	B-B	Rd.-Sw.	Diesel-Elec.	218,000	1,500	May	November	American-G. E.
Missouri-Kansas-Texas	3	B-B	Switching	Diesel-Elec.	132,800	600	November	Jan. '50	American-G. E.
	4	A1A-A1A	Passenger	Diesel-Elec.	316,500	2,250	November	Feb. '50	Electro-Motive
	9	B-B	Switching	Diesel-Elec.	248,000	1,500	November	Mar. '50	Electro-Motive
	1	B-B	Switching	Diesel-Elec.	240,000	1,600	November	Mar. '50	Fairbanks-Morse-West.
	1	B	Switching	Diesel-Mech.	30,000	130	March	November	Whitcomb-Hercules
Monongahela Connecting	3	B-B	Switching	Diesel-Elec.	220,000	1,000	April	.....	American-G. E.
Nashville, Chattanooga & St. Louis	4	B-B	Switching	Diesel-Elec.	248,000	1,000	July	October	Electro-Motive
	6	B-B	Rd.-Sw.	Diesel-Elec.	248,000	1,500	July	1949-50	Electro-Motive
New York, Chicago & St. Louis	1	B-B	Switching	Diesel-Elec.	88,000	400	February	September	G. E.-Cater.
New York, New Haven & Hfd.	12	B-B	Road	Diesel-Elec.	300,000	2,000	January	1st qtr. '49	American-G. E.
Northern Pacific	4	3(B-B)	Passenger	Diesel-Elec.	690,000	4,500	February	September	Electro-Motive
	1	3(B-B)	Passenger	Diesel-Elec.	690,000	4,500	May	September	Electro-Motive
	6	4(B-B)	Freight	Diesel-Elec.	920,000	6,000	September	Mar. '50	Electro-Motive
	8	B-B	Switching	Diesel-Elec.	248,000	1,200	September	December	Electro-Motive
	2	B-B	Rd.-Sw.	Diesel-Elec.	248,000	1,500	September	December	Electro-Motive
	2	B-B	Switching	Diesel-Elec.	230,000	1,000	September	December	American-G. E.
Patapsco & Back Rivers	3	B-B	Switching	Diesel-Elec.	235,000	1,000	May	.....	Baldwin-West.
Pearl River Valley	1	B-B	Switching	Diesel-Elec.	130,000	470	August	September	G. E.-Cummins
Pennsylvania	11	C-C	Transfer	Diesel-Elec.	360,000	2,500	November	1st qtr. '50	Lima-Hamilton-West.
	1	B-B	Freight	Diesel-Elec.	230,000	1,500	November	.....	Electro-Motive
	7	3(B-B)	Freight	Diesel-Elec.	690,000	4,500	November	.....	Electro-Motive
	4	4(B-B)	Freight	Diesel-Elec.	920,000	6,000	November	.....	Electro-Motive
	38	B-B	Switching	Diesel-Elec.	248,000	1,200	November	.....	Electro-Motive
	10	A1A-A1A	Passenger	Diesel-Elec.	316,500	2,250	November	.....	Electro-Motive
	33	B-B	Switching	Diesel-Elec.	198,000	600	November	.....	Electro-Motive
	24	B-B	Switching	Diesel-Elec.	198,500	750	November	.....	Baldwin-West.
	4	B-B	Switching	Diesel-Elec.	235,500	1,000	November	.....	Baldwin-West.
	6	B-B	Switching	Diesel-Elec.	235,000	1,000	November	.....	Baldwin-West.
	41	B-B	Switching	Diesel-Elec.	235,000	1,000	November	.....	Baldwin-West.
	8	B-B	Freight	Diesel-Elec.	258,000	1,500	November	.....	Baldwin-West.
	8	B-B	Freight	Diesel-Elec.	255,000	1,500	November	.....	Baldwin-West.
	24	B-B	Freight	Diesel-Elec.	240,000	1,600	November	May '50	Fairbanks, Morse-West.
	4	B-B	Freight	Diesel-Elec.	244,600	1,500	November	.....	American-G. E.
	4	B-B	Freight	Diesel-Elec.	235,200	1,500	November	.....	American-G. E.
	42	B-B	Switching	Diesel-Elec.	233,400	1,000	November	.....	American-G. E.
	10	B-B	Switching	Diesel-Elec.	199,900	660	November	.....	American-G. E.
	1	B-B	Switching	Diesel-Elec.	88,550	400	November	.....	General Electric
	2	2(B-B)	Freight	Electric	480,000	5,000	March	Dec. '50	General Electric
	1	2(B-B-B)	Freight	Electric	600,000	5,625	March	Nov. '50	Westinghouse
	1	2(C-C)	Freight	Electric	600,000	5,625	March	Jan. '51	Westinghouse
Pennsylvania-Reading Seashore Lines	6	B-B	Passenger	Diesel-Elec.	255,000	1,500	November	1950	Baldwin-West.
Peoria & Pekin Union	2	B-B	Switching	Diesel-Elec.	248,000	1,200	March	December	Electro-Motive
Pittsburgh, Chartiers & Youghiogheny	1	B-B	Switching	Diesel-Elec.	246,000	1,000	March	June	Fairbanks, Morse-West.
Reading	15	B-B	Switching	Diesel-Elec.	235,000	1,000	January	July-Sept.	Baldwin-West.
	30	.....	Road	Diesel-Elec.	.....	1,500	.....	.....	Electro-Motive
Richmond, Fredericksburg & Potomac	20	B-B	Freight	Diesel-Elec.	230,000	1,500	April	.....	Electro-Motive
	10	A1A-A1A	Passenger	Diesel-Elec.	316,500	2,250	April	.....	Electro-Motive
River Terminal	1	B-B	Switching	Diesel-Elec.	243,000	1,000	January	.....	Electro-Motive
St. Louis-San Francisco	5	B-B	Freight	Diesel-Elec.	239,000	1,500	March	October	American-G. E.
	15	B-B	Freight	Diesel-Elec.	248,000	1,500	April	1950	Electro-Motive
	14	A1A-A1A	Passenger	Diesel-Elec.	316,500	2,250	November	1950	Electro-Motive
St. Louis Southwestern	2	A1A-A1A	Passenger	Diesel-Elec.	303,000	2,000	April	November	American-G. E.
	2	B-B	Switching	Diesel-Elec.	248,000	1,000	June	December	Electro-Motive
	11	B-B	Freight	Diesel-Elec.	230,000	1,500	June	Jan. '50	Electro-Motive
	1	B-B	Rd.-Sw.	Diesel-Elec.	248,000	1,500	September	May '50	Electro-Motive
Seaboard Air Line	5	B-B	Rd.-Sw.	Diesel-Elec.	230,000	1,500	October	December	American-G. E.
Southern	1	B-B	Switching	Diesel-Elec.	230,000	1,500	April	October	American-G. E.
	4	B-B	Switching	Diesel-Elec.	230,000	1,500	Sept.	Nov.-Dec.	American-G. E.
	4	B-B	Switching	Diesel-Elec.	248,000	1,500	April	April '50	Electro-Motive
	11	B-B	Switching	Diesel-Elec.	248,000	1,500	September	April '50	Electro-Motive
	35	B-B	Switching	Diesel-Elec.	248,000	1,200	September	1949-50	Electro-Motive
Southern Pacific	1	A1A-A1A	Passenger	Diesel-Elec.	316,500	2,250	May	Jan. '50	Electro-Motive
	28	4(B-B)	Freight	Diesel-Elec.	920,000	6,000	May	1949-50	Electro-Motive
	22	B-B	Switching	Diesel-Elec.	230,800	1,000	May	1950	American-G. E.
	17	C-C	Freight	Diesel-Elec.	325,000	1,500	June	1949-50	Baldwin-West.
	4	B-B	Freight	Diesel-Elec.	140,000	600	July	Jan. '50	G. E.-Cooper-Bess.

Purchaser	No.	Wheel Arrangement	Service	Type	Weight Lb.	Horse- power	Date of Order	Date of Delivery	Builder Locomotive Builder Electrical Equipment Engine Builder
Spokane, Portland & Seattle.....	3**	B-B	Rd.-Sw.	Diesel-Elec.	228,600	1,500	Dec. '48	1949-50	American-G. E.
Texas Mexican.....	1	2(B-B)	Freight	Diesel-Elec.	460,000	3,000	February	.....	Electro-Motive
Texas & Pacific.....	7	B-B	Switching	Diesel-Elec.	248,000	1,500	October	1950	Electro-Motive
Toledo Terminal.....	1	B-B	Switching	Diesel-Elec.	110,100	1,000	April	October	American-G. E.
Union Railroad.....	5	B-B	Switching	Diesel-Elec.	325,000	1,500	June	September	Baldwin-West.
Upper Merion & Plymouth.....	1	B-B	Switching	Diesel-Elec.	88,000	400	November	Feb. '50	G. E.-Cater.
Wabash.....	3	3(B-B)	Freight	Diesel-Elec.	690,000	4,500	February	September	Electro-Motive
Western Maryland.....	12	B-B	Freight	Diesel-Elec.	230,000	1,500	November	Mar. '50	Electro-Motive
	4	B-B	Rd.-Sw.	Diesel-Elec.	230,000	1,500	December	Feb. '50	Electro-Motive
	4	B-B	Rd.-Sw.	Diesel-Elec.	230,000	1,500	December	Mar. '50	American-G. E.
Western Pacific.....	9	4(B-B)	Freight	Diesel-Elec.	920,000	6,000	November	Feb. '50	Electro-Motive
	2	3(B-B)	Passenger	Diesel-Elec.	774,000	4,500	November	Jan. '50	Electro-Motive

*Originally ordered by the U. S. S. R.

**Not listed last year.

Private Car Lines and Other Orders—For Service in the United States

Purchaser	No.	Wheel Arrangement	Service	Type	Weight Lb.	Horse- power	Date of Order	Date of Delivery	Builder Locomotive Builder Electrical Equipment Engine Builder
Allied Chemical & Dye.....	1	B-B	Switching	Diesel-Elec.	160,000	470	June	Jan. '50	G. E.-Cummins
	1	B	Switching	Diesel-Elec.	50,000	150	October	Feb. '50	G. E.-Cummins
Amalgamated Sugar Co.....	1	B	Switching	Diesel-Elec.	50,000	150	February	July	G. E.-Cummins
	2	B	Switching	Diesel-Elec.	50,000	150	March	July	G. E.-Cummins
American Steel & Wire Co.....	1	B-B	Switching	Diesel-Elec.	198,500	750	May	July	Baldwin-West.
Armco Steel Corp.....	1	B-B	Switching	Diesel-Elec.	240,000	1,000	April	June	Lima-Hamilton-West.
Baugh Chemical Co.....	1	B	Switching	Diesel-Elec.	50,000	150	January	March	G. E.-Cummins
Budd Co.....	1	B	Switching	Diesel-Elec.	50,000	150	May	July	G. E.-Cummins
Carbon Limestone Co.....	2	B	.....	D-Hydraulic	50,000	190	November	.....	Whitcomb-Hercules
Carnegie-Illinois Steel Corp.....	1	R	Quencher	Electric	60,000	.....	May	.....	Whitcomb-West.
Central Illinois Electric & Gas Co.	1	B	Switching	Diesel-Elec.	50,000	150	June	September	G. E.-Cummins
Chemical Construction Corp.....	1	B	Switching	Diesel-Elec.	50,000	150	July	November	G. E.-Cummins
Chicago Mill & Lumber Co.....	1	B-B	Switching	Diesel-Elec.	190,000	600	February	August	G. E.-Cooper-Bess.
Christopher Coal Co.....	1	B-B	Mine	Electric	60,000	376	March	Jan. '50	General Electric
Cleveland Electric Illuminating Co.....	1	B-B	Switching	Diesel-Elec.	190,000	600	January	September	G. E.-Cooper-Bess.
	1	B-B	Switching	Diesel-Elec.	90,000	300	September	December	G. E.-Cummins
Columbia Quarry Co.....	1	B-B	Switching	Diesel-Elec.	198,000	600	August	.....	Electro-Motive
Commonwealth Edison Co.....	1	B-B	Switching	Diesel-Elec.	130,000	470	March	March	G. E.-Cummins
Consumers Power Co.....	1	B-B	Switching	Diesel-Elec.	90,000	300	February	June	G. E.-Cummins
Corrales Mining Corp.....	1	B	Switching	Diesel-Elec.	50,000	150	May	September	G. E.-Cummins
Duke Power Co.....	1	B-B	Switching	Diesel-Elec.	90,000	300	October	December	G. E.-Cummins
France Stone Co.....	1	B-B	.....	Diesel-Elec.	130,000	480	May	June	Whit.-West.-Hercules
General American Transportation Corp.....	1	B-B	.....	Diesel-Elec.	100,000	380	January	August	Whit.-West.-Hercules
General Steel Castings Corp.....	1	B	Switching	Diesel-Elec.	50,000	150	July	August	G. E.-Cummins
Harlan Construction Co.....	1	B	Switching	Diesel-Elec.	50,000	150	August	August	G. E.-Cummins
	1	B	Switching	Diesel-Elec.	50,000	150	April	September	G. E.-Cummins
Harrisburg Steel Corp.....	1	B	.....	D-Hydraulic	40,000	190	July	.....	Whitcomb-Hercules
Indiana Wood Preserving Co.....	1	B	Switching	Diesel-Elec.	130,000	470	October	October	G. E.-Cummins
Interlake Iron Corp.....	1	B-B	Switching	Diesel-Elec.	90,000	300	February	April	G. E.-Cummins
International Croscoting Co.....	1	B	Switching	Diesel-Elec.	100,000	300	January	December	G. E.-Cummins
International Harvester Co.....	1	B	Switching	Diesel-Elec.	100,000	300	July	July	G. E.-Cummins
Jones & Laughlin Steel Corp.....	2	B	Switching	Diesel-Elec.	100,000	300	September	December	G. E.-Cummins
	1	B-B	Switching	Diesel-Elec.	88,000	400	January	September	G. E.-Cater.
Kansas City Power & Light Co..	2	B-B	Switching	Diesel-Elec.	170,000	470	September	Sept. '50	G. E.-Cummins
Kennecott Copper Corp.....	6	B-B	Switching	Diesel-Elec.	140,000	600	January	October	G. E.-Cooper-Bess.
	1	B-B	Switching	Diesel-Elec.	90,000	300	February	July	G. E.-Cummins
Kentucky Utilities Co.....	1	B-B	Switching	Diesel-Elec.	90,000	300	September	November	G. E.-Cummins
Koenig Coal & Supply Co.....	1	B-B	Switching	Diesel-Elec.	160,000	470	May	August	G. E.-Cummins
Koppers Co.....	1	B	Switching	Diesel-Elec.	50,000	150	September	October	G. E.-Cummins
	1	B	Coke Oven	Electric	40,000	74	July	Apr. '50	General Electric
Malagash Salt Co.....	1	B-B	Switching	Diesel-Elec.	90,000	300	April	May	G. E.-Cummins
Mathieson Chemical Corp.....	1	B-B	Switching	Diesel-Elec.	90,000	300	July	August	G. E.-Cummins
Missouri Portland Cement Co.....	1	B-B	Switching	Diesel-Elec.	90,000	300	February	May	G. E.-Cummins
National Portland Cement Co.....	1	B	Switching	Diesel-Elec.	50,000	150	February	April	G. E.-Cummins
National Tube Co.....	3	B+B	Switching	Diesel-Elec.	100,000	300	February	December	G. E.-Cummins
North Carolina Granite Corp.....	1	B-B	Switching	Diesel-Elec.	90,000	300	May	December	G. E.-Cummins
Northern States Power Co.....	1	B-B	Switching	Diesel-Elec.	90,000	300	June	June	G. E.-Cummins
Oliver Iron Mining Co.....	1	B-B	Switching	Diesel-Elec.	140,000	600	February	November	G. E.-Cooper-Bess.
Omaha Public Power District.....	1	B-B	Switching	Diesel-Elec.	90,000	300	August	August	G. E.-Cummins
Phelps Dodge Corp.....	2	B	Switching	Diesel-Elec.	50,000	150	June	Feb. '50	G. E.-Cummins
Philadelphia Electric Co.....	1	B-B	Switching	Diesel-Elec.	90,000	300	September	November	G. E.-Cummins
Pittsburgh Steel Co.....	2	B-B	Switching	Diesel-Elec.	160,000	470	April	May	G. E.-Cummins
Public Service Co. of Northern Illinois.....	1	B-B	Switching	Diesel-Elec.	198,000	600	December	.....	Electro-Motive
Republic Steel Corp.....	1	B	Switching	Diesel-Elec.	100,000	300	January	November	G. E.-Cummins
	1	B	Switching	Diesel-Elec.	100,000	300	January	November	Whit.-West.-Cummins
John A. Roebling's Sons Co.....	1	B	Switching	Diesel-Elec.	50,000	150	January	April	G. E.-Cummins
Sanford Terminal Railroad.....	1	B-B	Switching	Diesel-Elec.	140,000	600	January	July	G. E.-Cooper-Bess.
Sloss-Sheffield Steel & Iron Co.....	1	B-B	Switching	Diesel-Elec.	160,000	470	November	Jan. '50	G. E.-Cummins
Standard Oil Co.....	1	B-B	Switching	Diesel-Elec.	100,000	300	July	September	G. E.-Cummins
Standard Slag Co.....	1	B-B	Switching	Diesel-Elec.	160,000	470	September	October	G. E.-Cummins
Taylor-Colquitt Co.....	1	B-B	Switching	Diesel-Elec.	90,000	300	May	June	G. E.-Cummins
Texas Co.....	1	B-B	.....	Diesel-Elec.	160,000	650	May	October	Whit.-West.-Buda
United States Army.....	1	B-B	Switching	Diesel-Elec.	235,000	1,000	April	July	Electro-Motive
U. S. Gypsum Co.....	1	B-B	Switching	Diesel-Elec.	90,000	300	October	December	G. E.-Cummins
	1	B-B	Switching	Diesel-Elec.	90,000	300	January	April	G. E.-Cummins
Weston Steel Co.....	1	B	Switching	Diesel-Elec.	50,000	150	February	September	G. E.-Cummins
Westmoreland Coal Co.....	4	B-B	Switching	Diesel-Elec.	50,000	150	January	September	G. E.-Cummins
Whitin Machine Works.....	1	B-B	Switching	Diesel-Elec.	46,000	150	August	July '50	G. E.-Cummins
Youngstown Sheet & Tube Co.....	3	B	.....	Diesel-Elec.	100,000	380	April	.....	Whit.-West.-Hercules
	2	B	.....	Diesel-Elec.	50,000	190	April	.....	Whit.-West.-Hercules

For Export

Purchaser	No.	Wheel Arrangement	Service	Type	Weight Lb.	Horse power	Date of Order	Date of Delivery	Builder Locomotive Builder Electrical Equipment Engine Builder
Algerian Railroad.....	5	B-B	Rd.-Sw.	Diesel-Elec.	225,000	1,000	April	Oct.-Nov.	Baldwin West.
Algoma Steel Co. (Canada).....	2	B-B	Switching	Diesel-Elec.	160,000	470	May	September	G. E.-Cummins
Australian Paper Mfg. Co.....	2	B-B	.....	Diesel-Elec.	100,000	380	May	.....	Whit.-West.-Hercules
British Phosphate Co. (Christmas Island, Straights Settlement)...	1	B	.....	Diesel-Elec.	88,000	380	March	.....	Whit.-West.-Cater.
Brunner Mond Canada, Ltd.	1	B-B	Switching	Diesel-Elec.	90,000	300	April	May	G. E.-Cummins
Canadian National.....	18	B-B	Road	Diesel-Elec.	140,000	600	May	1st. qtr. '50	G. E.-Cooper-Bess.
Chemical Construction Corp. (For Mexico).....	1	B	Switching	Diesel-Elec.	50,000	150	January	March	G. E.-Cummins
Cherifien des Phosphates (French Morocco).....	1	B-B	Rd.-Sw.	Diesel-Elec.	228,000	750	May	.....	Baldwin-West.
Chilean State Rys.....	4	A1A-A1A	Road	Diesel-Elec.	170,000	1,050	May	October	G. E.-Cooper-Bess.
.....	2	B+B	Switching	Diesel-Elec.	94,000	400	May	June	G. E.-Cooper-Bess.
.....	5	B-B	Switching	Diesel-Elec.	140,000	600	May	July	G. E.-Cooper-Bess.
Dominion Steel & Coal Corp. (Canada).....	1	B+B	Switching	Diesel-Elec.	100,000	300	March	December	G. E.-Cummins
French Railway Mission (For Africa).....	10	C-C	.....	Diesel-Elec.	208,000	1,350	July	.....	Whit.-West.-Superior
.....	6	C-C	.....	Diesel-Elec.	132,000	675	July	.....	Whit.-West.-Superior
General Supply Co. of Canada ...	1	B	.....	D-Hydraulic	40,000	190	November	.....	Whitcomb-Hercules
Greater Winnipeg Water District (Canada).....	1	B-B	Switching	Diesel-Elec.	88,000	400	August	September	G. E.-Cater.
Harbour Engineer (India).....	1	B	.....	D-Hydraulic	28,000	190	November	.....	Whitcomb-Hercules
Hudson Bay Mining & Smelting Co. (Canada).....	1	B-B	Switching	Electric	100,000	274	April	May '50	General Electric
Mexican Gov't.....	2	B-B	Freight	Diesel-Elec.	230,000	1,500	February	.....	Electro-Motive
.....	2	B-B	Passenger	Diesel-Elec.	258,000	1,500	February	.....	Electro-Motive
Montreal Locomotive Works.....	1	B-B	Switching	Diesel-Elec.	160,000	470	April	July	G. E.-Cummins
Moroccan Railroad (French Morocco).....	2	B-B	Rd.-Sw.	Diesel-Elec.	261,000	1,500	April	.....	Baldwin-West.
Mutual Chem. Co. of America (For Turkey).....	10	B	Mine	Diesel-Mech.	14,000	35	November	.....	Whitcomb-Buda
National of Mexico.....	1	B-B	Passenger	Diesel-Elec.	230,000	1,500	October	.....	Electro-Motive
Oesterreichisch-Alpine Montangesellschaft (Austria)...	7	B	Mine	Electric	40,000	200	July	June '50	General Electric
.....	2	B	Mine	Electric	56,000	137	July	Sept. '50	General Electric
Pacific Great Eastern Ry. (Canada).....	2	B-B	Freight	Diesel-Elec.	140,000	600	October	Apr. '50	G. E.-Cooper-Bess.
Petroleos Mexicanos.....	2	B-B	Switching	Diesel-Elec.	160,000	470	February	July	G. E.-Cummins
Philippine Islands.....	1	B	Switching	Diesel-Elec.	50,000	150	May	September	G. E.-Cummins
Republic Steel Liberia Mining.....	2	B	Switching	Diesel-Elec.	50,000	150	September	December	G. E.-Cummins
S. E. M., Belgium.....	2	B	Switching	Diesel-Elec.	50,000	150	February	September	G. E.-Cummins
Singer Mfg. Co. (England).....	1	B	Switching	Diesel-Elec.	50,000	150	July	September	G. E.-Cummins
Societe des Ciments du Congo (Belgian Congo).....	1	B	Switching	Diesel-Elec.	50,000	150	May	September	G. E.-Cummins
.....	1	B	Switching	Diesel-Elec.	50,000	150	August	November	G. E.-Cummins
South Porto Rico Sugar Co. (Dominican Republic).....	1	B-B	Switching	Diesel-Elec.	140,000	600	June	November	G. E.-Cooper-Bess.
Walter J. Stahl Co. (For Mauritius)	2	B	.....	Diesel-Mech.	24,000	113	February	.....	Whitcomb-Hercules
.....	2	B	.....	Diesel-Mech.	24,000	113	April	.....	Whitcomb-Hercules
Standard Mining Equipment for Soc'd Elec. (Belgium).....	1	B	.....	D-Hydraulic	40,000	190	July	.....	Whitcomb-Hercules
Sterling Refinery (England).....	1	B	Switching	Diesel-Elec.	90,000	300	July	December	G. E.-Cummins
Tata, Inc. (India).....	1	B	.....	Diesel-Mech.	16,000	70	August	.....	Whitcomb-Hercules
.....	1	B	.....	D-Hydraulic	28,000	190	August	.....	Whitcomb-Hercules
Victoria Lumber Co. Ltd.	1	B-B	Switching	Diesel-Elec.	90,000	300	March	May	G. E.-Cummins
Yillies Bros. & Co. Ltd.	1	B	Switching	Diesel-Elec.	50,000	150	February	August	G. E.-Cummins

Canada

Purchaser	No.	Wheel Arrangement	Service	Type	Weight Lb.	Horse power	Date of Order	Date of Delivery	Builder
Allard Lake (Que.) Mines.....	2	B-B	Switching	Diesel-Elec.	230,000	1,000	August	.....	Montreal Locomotive
Alma & Jonquieres.....	1	B-B	Switching	Diesel-Elec.	230,000	1,000	June	.....	Montreal Locomotive
Canadian Commercial Corp.....	1	B-B	Switching	Diesel-Elec.	230,000	1,000	December	.....	Montreal Locomotive
Canadian Johns-Manville Co.....	1	B-B	Switching	Diesel-Elec.	230,000	1,000	August	.....	Montreal Locomotive
Canadian National.....	8	B-B	Freight	Diesel-Elec.	250,000	1,500	November	1950	Montreal Locomotive
.....	20	B-B	Switching	Diesel-Elec.	237,000	1,000	May	Aug.-Dec.	Montreal Locomotive
.....	18	B-B	Rd.-Sw.	Diesel-Elec.	140,000	600	May	1950	Canadian G. E.
.....	3	B-B	Passenger	Electric	174,000	1,350	July	.....	Canadian G. E.
Canadian Pacific.....	40	B-B	Road	Diesel-Elec.	.....	1,500	November	.....	Montreal Locomotive
.....	4	B-B	Rd.-Sw.	Diesel-Elec.	.....	1,500	November	.....	Montreal Locomotive
.....	10	B-B	Road	Diesel-Elec.	.....	1,500	November	.....	G. M. Diesel, Ltd.
.....	3	B-B	Switching	Diesel-Elec.	.....	1,000	November	.....	G. M. Diesel, Ltd.
Napierville Junct.....	2	B-B	Switching	Diesel-Elec.	250,000	1,500	October	.....	Montreal Locomotive

There is no country under the sun where the standard of living of the average man is as high as in the United States, nor is there a people who love individual freedom of action as much as do we who live under our form of government. There is probably no danger of a sudden adoption of Socialism or Communism here if all understand that these ultimately mean the loss of freedom so dearly bought by our forebears and so greatly cherished by use.

The danger lies in the slow and insidious growth of unrecognized socialistic tendencies, until it is too late for steps to be retraced. Eggs cannot be unscrambled. These tendencies are found in the constant encroachment of government upon the fields of business under the general welfare clause of our Constitution and its powers to regulate commerce; the growth of regulation and restrictive laws and the assumption of authority by administrative bureaus. —James B. Hill, president of the Louisville & Nashville.

Passenger-Train Cars Ordered in 1949

By FRED C. MILES
Associate Editor

Passenger-train cars ordered in the United States last year totaled 138, including 10 exhibition cars ordered by the General Electric Company, according to reports received by *Railway Age*. This figure contrasts with 970 cars delivered during the year. All but 40 of the cars ordered will be built by contract builders. The 138 cars ordered in 1949 constitute the lowest number of passenger-train cars for domestic use ordered in this country since 1942, when only 34 cars were purchased. In 1931, 1932 and 1933 passenger-train cars ordered for domestic service totaled, respectively, 37, 44 and 19.

The cars ordered in 1949 are listed by purchaser in an accompanying table. Summaries and analyses of passenger-train cars ordered and delivered each year from 1920 through 1949 are presented in two additional tables.

The detailed list of passenger-train cars ordered was compiled, as in previous Statistical Issues of *Railway Age*, from reports by the purchasers which were checked and amplified with information received from the car builders through the cooperation and assistance of the American Railway Car Institute.

Passenger-Train Cars Ordered, 1920-1949

Year	Carbuilders' Shops			Railroad Shops		Total Domestic	U. S. Export
	Passenger Carrying	Non-Passenger Carrying	For Pullman Company	Passenger Carrying	Non-Passenger Carrying		
1949.....	85	13	0	0	40	138	0
1948.....	444	62	0	0	0	506	22
1947.....	128	11	0	138	39	316	63
1946.....	1,121	64	0	56	6	1,247	56
1945.....	2,690*	213	0	90	0	2,993	49
1944.....	683*	32	0	10	0	725	374
1943.....	1,670*	0	0	0	15	1,685	0
1942.....	32*	0	0	0	0	34	0
1941.....	206*	115	197	31	0	549	27
1940.....	305	15	53	0	6	379	21
1939.....	175	21	125	0	0	321	28
1938.....	79	33	84	63	19	278	0
1937.....	181	145	171	39	31	567	0
1936.....	367	33	1	38	12	451	0
1935.....	48	69	10	6	0	133	0
1934.....	307	20	8	71	23	429	15
1933.....	13	1	3	2	0	19	0
1932.....	33	6	0	1	4	44	0
1931.....	10	21	1	3	2	37	21
1930.....	405	102	102	16	75	700	15
1929.....	767	677	550	26	363	2,383	108
1928.....	654	1,282	244	53	160	2,393	35
1927.....	993	471	118	84	27	1,693	47
1926.....	965	469	519	55	52	2,060	0
1925.....	1,002	699	479	20	74	2,274	68
1924.....	1,202	761	701	14	97	2,775	25
1923.....	762	930	424	18	98	2,232	5
1922.....	1,442	705	300	23	14	2,484	10
1921.....	125	11	100	1	50	287	145
1920.....	690	380	458	12	51	1,591	114

*Includes troop hospital, sleeping, and kitchen cars.
Source: 1949—*Railway Age*; all other—American Railway Car Institute.

Passenger-Train Cars Delivered

Year	For Domestic Service	U. S. Export	Total
1949.....	970	75	1,045
1948.....	767	55	822
1947.....	670	26	696
1946.....	1,329	35	1,364
1945.....	928	0	928
1944.....	995	0	995
1943.....	681	21	702
1942.....	387	11	398
1941.....	349	14	363
1940.....	251	28	279
1939.....	276	0	276
1938.....	352	0	352
1937.....	557	0	557
1936.....	151	0	151
1935.....	200	0	200
1934.....	180	15	195
1933.....	7	0	7
1932.....	71	0	71
1931.....	269	21	290
1930.....	1,441	40	1,481
1929.....	2,074	128	2,202
1928.....	1,341	121	1,462
1927.....	1,933	42	1,975
1926.....	2,689	111	2,800
1925.....	2,341	42	2,383
1924.....	2,437	54	2,491
1923.....	1,918	45	1,963
1922.....	940	156	1,096
1921.....	1,110	49	1,159
1920.....	768	135	903

Source: American Railway Car Institute—1949 figures include an estimate for December.

For Service in the United States

Purchaser	No.	Class	Length Ft. In.	Construction	Seating Capacity	Weight Lb.	Date of Order	Date of Delivery	Builder
Atchison, Topeka & Santa Fe....	1	Business Car	85 0	H. S. Steel	..	.....	January	December	Pullman-Standard
Chicago, Burlington & Quincy...	30	Coach	85 0	All St. Steel	148	133,000	February	4th qtr. '50	Budd
Great Northern.....	6	Bag.-Exp.	85 0	H. S. Steel	..	.....	December	.....	R. R. Shops
	6	Bag.-Mail	85 0	H. S. Steel	..	116,000	October	.....	Amer. Car & Fdy.
	6	Bag.-Dorm.	85 0	H. S. Steel	..	125,600	October	.....	Amer. Car & Fdy.
	6	Coach	85 0	H. S. Steel	60	124,400	October	.....	Amer. Car & Fdy.
	6	Coffee Shop-Lnge.	85 0	H. S. Steel	46	131,800	October	.....	Amer. Car & Fdy.
	6	Dining	85 0	H. S. Steel	36	136,400	October	.....	Amer. Car & Fdy.
	6	Obs.-Lnge.	85 0	H. S. Steel	36	125,400	October	.....	Amer. Car & Fdy.
Manitou & Pikes Peak.....	30	Sleeping	85 0	H. S. Steel	..	.....	October	1950	Pullman-Standard
Pennsylvania.....	1	Coach	40 0	Alum.	56	28,000	November	April '50	Winter Weiss Co.
	10	Bag.-Mail	74 4½	Steel	..	140,000	July	.....	R. R. Shops

Other Orders—For Service in the United States

Purchaser	No.	Class	Length Ft. In.	Construction	Seating Capacity	Weight Lb.	Date of Order	Date of Delivery	Builder
General Electric Co.....	10	Exhibition	85 0	H. S. Steel	..	.....	June	1950	Pullman-Standard

Freight-Train CARS ORDERED in 1949 Total 9,188

By FRED C. MILES
Associate Editor

Freight Cars Delivered for Domestic Use— 1920-1949

Orders for 9,188 freight-train cars, including 216 for export, were placed in the United States in 1949, according to reports received by *Railway Age*. The 8,972 cars ordered for domestic use, of which 5,344 were ordered from company shops, is the smallest number ordered since 1933, when the total for domestic roads reached a low of 1,720 cars. Freight-train cars delivered last year totaled 95,086, including 2,564 for export.

The cars ordered last year are listed in detail by individual purchaser in an accompanying table. Two other tables summarize and analyze deliveries and orders for freight-train cars for the years 1920-1949, inclusive. Compiled from reports received from the purchasers, the detailed list of orders was checked and amplified with information received from the car builders through the cooperation and assistance of the American Railway Car Institute.

Year	Railroad and Private Line Shops	Car- builders	Total	U. S. Export
1949.....	29,502	63,020	92,522	2,564
1948.....	29,444	83,196	112,640	2,245
1947.....	15,532	52,990	68,522	27,721
1946.....	10,070	31,885	41,955	18,020
1945.....	12,853	31,011	43,864	10,658
1944.....	15,050	27,953	43,003	38,759
1943.....	7,220	24,616	31,836	43,117
1942.....	15,444	47,429	62,873	8,529
1941.....	17,227	63,396	80,623	2,386
1940.....	17,025	45,316	62,341	1,734
1939.....	5,641	19,491	25,132	381
1938.....	6,480	9,990	16,470	611
1937.....	15,569	61,929	77,498	1,321
1936.....	15,643	30,969	46,612	523
1935.....	1,550	5,965	7,515	1,263
1934.....	8,965	16,211	25,176	91
1933.....	1,300	863	2,163	39
1932.....	2,770	482	3,252	84
1931.....	5,706	7,497	13,203	410
1930.....	9,839	65,081	74,920	1,731
1929.....	12,878	68,712	81,590	3,448
1928.....	7,685	38,375	46,060	1,453
1927.....	8,540	54,830	63,370	467
1926.....	9,964	78,898	88,862	2,445
1925.....	11,028	94,707	105,735	3,077
1924.....	9,618	104,093	113,711	1,584
1923.....	29,501	146,247	175,748	1,966
1922.....	2,423	63,866	66,289	1,399
1921.....	1,033	39,259	40,292	5,351
1920.....	14,171	46,784	60,955	14,602

Source: American Railway Car Institute. (The 1949 totals include an estimate for December.)

Number and Classification of Freight Cars Ordered for Domestic Use (Carbuilder and Railroad Shops)

Year	Box	Flat	Stock	Gondola	Hopper	Tank	Refrig.	Others	Non. Rev.	Total
1949.....	4,252	54	0	244	3,037	362	750	68	205	8,972
1948.....	17,640	4,639	500	19,328	40,193	4,264	6,510	881	685	94,640
1947.....	38,490	636	150	14,877	52,036	6,996	6,200	586	337	120,308
1946.....	30,500	1,173	0	4,577	15,511	4,825	10,253	153	201	67,193
1945.....	15,440	1,241	0	5,727	12,960	915	1,085	174	320	37,862
1944.....	31,066	823	300	6,758	12,674	972	1,465	371	52	54,481
1943.....	10,027	2,212	0	5,312	18,400	556	50	153	320	37,030
1942.....	2,351	2,300	0	9,711	10,197	2,716	0	1,285	0	28,560
1941.....	55,939	3,459	400	15,814	23,213	2,800	2,370	1,614	1,288	106,897
1940.....	35,530	885	350	9,654	14,446	1,671	785	1,965	542	65,828
1939.....	20,140	976	100	6,419	21,923	2,373	675	1,127	182	53,915
1938.....	7,912	931	568	4,279	2,017	230	0	299	134	16,370
1937.....	20,564	1,365	500	10,120	12,817	692	1,770	287	1,827	49,942
1936.....	21,866	1,224	453	8,782	22,271	5,745	7,495	100	1,812	69,748
1935.....	8,925	75	50	2,755	5,970	313	600	32	29	18,749
1934.....	9,831	1,656	0	2,077	10,460	341	198	0	3	24,566
1933.....	619	50	0	4	33	269	615	129	1	1,720
1932.....	1,290	11	0	270	150	52	137	9	32	1,951
1931.....	2,160	400	750	1,072	3,113	261	2,314	28	159	10,197
1930.....	17,012	2,046	950	9,900	4,036	2,920	5,689	384	468	43,405
1929.....	57,139	3,888	2,950	18,289	16,117	4,446	3,583	789	2,940	110,141
1928.....	21,148	3,709	906	6,495	6,087	2,585	5,568	280	1,376	48,154
1927.....	28,975	2,694	1,668	13,735	11,835	5,930	4,432	1,067	2,655	72,991
1926.....	18,277	1,819	2,556	8,366	11,483	4,096	10,109	2,188	2,676	61,570
1925.....	40,668	2,720	2,749	21,869	6,448	4,701	5,308	802	1,320	86,585
1924.....	68,282	4,021	6,504	23,603	21,350	3,474	14,347	2,274	1,761	145,616
1923.....	35,286	2,904	714	16,318	23,883	6,003	6,207	2,448	1,846	95,609
1922.....	68,767	2,800	4,236	31,742	36,223	5,795	22,587	4,385	1,675	178,210
1921.....	5,130	292	630	5,427	4,708	327	4,905	1,048	298	22,765
1920.....	14,470	1,417	3,435	10,080	23,142	15,631	8,785	1,724	1,456	80,140

Source: 1949—Railway Age; all other—American Railway Car Institute.

Railroad Orders—For Service in the United States

Purchaser	No.	Class	Capacity	Length Ft.	In.	Construction	Weight Lb.	Date of order	Date of Delivery	Builder
Atchison, Topeka & Santa Fe.....	50	Ore	190,000	27	0	Steel	.....	November	1950	Pullman-Standard
	500	Box	100,000	40	6	Steel	.....	November	1950	R. R. Shops
	250	Cov. Hopper	140,000	..	..	Steel	.....	November	1950	R. R. Shops
Boston & Albany.....	5	Caboose	.....	33	7	Steel Frame	.....	February	December	Despatch Shops

Railroad Orders—For Service in the United States (cont.)

Purchaser	No.	Class	Capacity	Length		Construction	Weight Lb.	Date of Order	Date of Delivery	Builder
				Ft.	In.					
Chicago & North Western.....	1,000	Box	100,000	40	6	Steel	45,000	February	1949	Pullman-Standard
	250	Auto	100,000	40	6	Steel	53,400	February	1949	Pullman-Standard
Chicago, Burlington & Quincy.....	1,400	Box	.....	..	..	.....	.....	December	.....	R. R. Shops
	800	Hopper	.....	..	..	Steel	.....	December	.....	R. R. Shops
Chicago, Indianapolis & Louisville.....	1	Box	100,000	40	6	Steel Frame	44,400	October	November	Pullman-Standard
Chicago, Milwaukee, St. Paul & Pacific...	4	Flat	140,000	..	..	Steel Frame	.....	October	1950	R. R. Shops
Denver & Rio Grande Western.....	50	Gondola	140,000	65	6	Steel	64,200	January	December	Bethlehem
Great Northern.....	1	Caboose	.....	30	0	Steel	56,000	August	Mar. '50	R. R. Shops
International-Great Northern.....	80	Cov. Hopper	140,000	39	10	Steel	57,000	March	3rd qtr. '49	R. R. Shops
La Salle & Bureau County.....	20	Box	100,000	40	6	Steel	44,000	August	August	Pullman-Standard
Lehigh & New England	35	Cov. Hopper	140,000	26	3½	Steel	54,000	December	1950	Bethlehem
Louisville & Nashville..	100	Cov. Hopper	140,000	29	3	Steel	51,000	August	1950	Pullman-Standard
Minneapolis, St. Paul & Sault Ste. Marie	200	Hopper	140,000	19	10½	Steel	43,600	July	1st half '50	R. R. Shops
Missouri-Kansas-Texas	79	Box	100,000	40	6	Steel	44,400	October	October	Pullman-Standard
Missouri Pacific.....	100	Cov. Hopper	140,000	39	10	Steel	57,000	March	4th qtr.	R. R. Shops
Nashville, Chattanooga & St. Louis.....	25	Cov. Hopper	140,000	29	3	Steel	51,000	October	1950	Pullman-Standard
New Jersey, Indiana & Illinois.....	50	Box	10,000	40	6	Steel	.....	June	1950	Amer. Car & Fdy.
	50	Box	100,000	40	6	Steel	.....	December	1950	Amer. Car & Fdy.
New Orleans Public Belt	7	Cov. Hopper	140,000	29	3	Steel	58,000	July	1949-50	Thrall Car
New York Central....	95	Caboose	.....	33	7	Steel Frame	52,640	February	December	Despatch Shops
New York, Chicago & St. Louis.....	200	Auto	100,000	50	6	Steel	55,500	May	Nov.-Dec.	Amer. Car & Fdy.
Norfolk & Western....	25	Gondola	140,000	65	6	Steel	65,900	January	Aug.-Sept.	Virginia Bridge
Northern Pacific.....	500	Hopper	140,000	42	8	Steel	44,900	January	1949	Pressed Steel
	750	Box	100,000	40	6	Steel	45,500	January	1949-50	R. R. Shops
	100	Gondola	140,000	52	6	Steel	60,900	July	Nov.-Dec.	Bethlehem
Patapsco & Back Rivers										
Pennsylvania-Reading Seashore Lines.....	19	Caboose	.....	24	6	Steel Frame	60,000	March	1959	R. R. Shops
Pittsburgh & Lake Erie	10	Caboose	.....	27	7	Steel Frame	.....	1949	1950	R. R. Shops
Reading.....	100	Cov. Cement Hopper	140,000	21	4¾	Steel	51,000	November	1950	R. R. Shops
St. Louis, Brownsville & Mexico.....	80	Cov. Hopper	140,000	39	10	Steel	57,000	March	1949	R. R. Shops
Seaboard Air Line.....	25	Caboose	.....	30	0	Steel Frame	.....	June	Jan. '50	Int'l Ry. Car
South Buffalo.....	50	Hopper	100,000	33	0	Steel	38,600	March	September	Bethlehem
	50	Gondola	140,000	52	6	Steel	60,900	July	December	Bethlehem
Southern.....	200	Cov. Hopper	140,000	29	3	Steel	51,000	May	1949	Pullman-Standard
Wabash.....	400	Hopper	100,000	30	6	Steel	.....	December	1950	R. R. Shops
Wheeling & Lake Erie..	50	Caboose	.....	27	1½	Steel	45,300	January	1949	R. R. Shops

Private Car Lines and Other Orders—For Service in the United States

Purchaser	No.	Class	Capacity	Length		Construction	Weight Lb.	Date of Order	Date of Delivery	Builder
				Ft.	In.					
Atlas Powder Co.....	1	Tank	8,000 gals.	34	2¾	Alum.	44,320	November	.....	Amer. Car & Fdy.
J. T. Baker Chem. Co.	2	Tank	8,000 gals.	33	7¾	Steel	42,300	June	.....	Amer. Car & Fdy.
Bethlehem Steel Co. .	18	Ore	150,000	19	10¾	Steel	40,600	January	May	Bethlehem
	18	Gondola	140,000	41	6	Steel	43,400	January	August	Bethlehem
Dow Chemical Co.....	1	Tank	2,300 gals.	..	..	.....	.....	April	December	General American
Eastern Gas & Fuel Associates.....	50	Hopper	140,000	40	8	Steel	47,400	April	June	Bethlehem
Ethyl Dow Chemical Co.....	1	Tank	8,000 gals.	..	..	.....	.....	February	December	General American
Ford Motor Co.....	50	Flat	200,000	50	0	Steel	58,500	February	July	Greenville
General Electric Co. .	2	Box	100,000	60	6	Steel	72,550	June	Feb. '50	Greenville
Interstate Tank Car Corp.....	1	Tank	100,000	33	8¾	Steel	44,000	April	October	Amer. Car & Fdy.
Lion Oil Co.....	20	Tank	10,000 gals.	..	..	.....	.....	February	October	General American
	20	Tank	100,000	35	1¾	Alum.	45,000	January	.....	Amer. Car & Fdy.
	25	Tank	8,000 gals.	33	3¾	Steel	13,500	January	.....	Amer. Car & Fdy.
	25	Tank	7,999 gals.	33	3¾	Steel	13,500	August	.....	Amer. Car & Fdy.
	1	Tank	7,940 gals.	33	1	Steel	13,340	August	.....	Amer. Car & Fdy.
	24	Tank	10,000 gals.	35	1¾	Alum.	45,000	November	.....	Amer. Car & Fdy.
Merchants Despatch Transp. Corp.....	500	Refrig.	80,000	..	..	.....	.....	December	.....	Co. Shops
Pennsylvania Salt Mfg. Co.....	1	Tank	8,000 gals.	34	2¾	Alum.	39,000	November	.....	Amer. Car & Fdy.
Sid Richardson Carbon Co.....	25	Cov. Hopper	100,000	45	10¾	Steel	52,800	January	1949	General American
Shippers Car Line Corp.....	1	Tank	100,000	34	1	Steel	62,600	February	November	Amer. Car & Fdy.
	55	Tank	140,000	33	5¼	Steel	62,300	March	.....	Amer. Car & Fdy.
	2	Tank	80,000	26	0	Steel	37,400	May	September	Amer. Car & Fdy.
	8	Tank	80,000	26	0	Steel	36,900	May	September	Amer. Car & Fdy.
	2	Tank	100,000	33	8	St. Steel	53,707	July	.....	Amer. Car & Fdy.
	1	M. U. Tank	80,000	..	..	Steel	53,500	July	August	Amer. Car & Fdy.
	1	Tank	100,000	34	6	Alum.	46,000	July	.....	Amer. Car & Fdy.
	25	Tank	80,000	26	0	Steel	37,200	August	.....	Amer. Car & Fdy.
	15	Tank	80,000	34	1	Alum.	37,000	October	.....	Amer. Car & Fdy.
	12	Tank	100,000	35	2	Steel	66,400	Oct.-Nov.	.....	Amer. Car & Fdy.
	1	Tank	5,800 gals.	..	..	Steel	.....	November	.....	Amer. Car & Fdy.
Stauffer Chemical Co..	3	Tank	100,000	29	7½	Steel	40,300	October	.....	Amer. Car & Fdy.
Tennessee Corp.....	4	M. U. Tank	80,000	..	..	Steel	53,500	February	July	Amer. Car & Fdy.
United States Army ..	8	Tank	100,000	33	7½	Steel	.....	Aug.-Sept.	.....	Amer. Car & Fdy.

Private Car Lines and Other Orders—For Service in the United States

Purchaser	No.	Class	Capacity	Length		Construction	Weight Lb.	Date of Order	Date of Delivery	Builder
				Ft.	In.					
United States Metal Refining Co.	25	Hopper	110,000	31	0	Steel	41,000	January	June	Bethlehem
United States Navy...	1	Hopper	100,000	33	0	Steel	39,200	April	June	Amer. Car & Fdy.
United States War Department	9	Hopper	100,000	33	0	Steel	44,100	May	1949	General American
Western Fruit Express Co.	1	Gondola	100,000	41	3	Steel	43,400	June	October	Amer. Car & Fdy.
Youngstown Sheet & Tube Co.	250	Refrig.	80,000	40	0	Steel	57,700	February	September	Pacific Car & Fdy.
	2	Tank	10,000 gals. ...	..	..	.....	.....	August	December	General American

United States—Export

Purchaser	No.	Class	Capacity	Length		Construction	Weight Lb.	Date of Order	Date of Delivery	Builder
				Ft.	In.					
Canadian Industries, Inc.	1	Tank	8,000 gals.	34	1	Alum.	49,800	January	August	Amer. Car & Fdy.
Canadian Pacific	400*	Box	100,000	40	6	Steel	44,800	Dec. '48	June	Pullman-Standard
Comision Federal de Electricidad (Mexico). Corporacion de Fomento de la Produccion (Chile)	1	Tank	100,000	..	..	.....	.....	March	November	General American
National Rys. of Mexico	7	Flat	100,000	50	0	Steel	48,500	May	April '50	Magor
Socony-Vacuum Oil Co. (For Brazil)	200	Gondola	100,000	48	4	Steel	.....	November	.....	Amer. Car & Fdy.
Daniel Viela, S. A.	2	Tank	10,500 gals. ...	..	..	.....	.....	July	October	General American
	5	Tank	80,000	..	..	.....	.....	November	1950	General American

Canada

Purchaser	No.	Class	Capacity	Length		Construction	Weight Lb.	Date of Order	Date of Delivery	Builder
				Ft.	In.					
Canadian National ...	2	Flat	270,000	59	9	Steel	.....	July	Feb. '50	Can. Car & Fdy.
Canadian Pacific	40*	Caboose	80,000	28	5 1/4	Steel	41,000	Dec. '48	September	R. R. Shops
	350	Refrig.	100,000	40	0	Steel	62,400	January	1949	Nat'l Steel Car
	200	Flat	100,000	52	6	Steel	51,000	January	October	Nat'l Steel Car
	650	Gondola	140,000	52	6 1/4	Steel	52,200	January	Jan. '50	Eastern Car
	100	Ore	150,000	23	9	Steel	50,000	March	Jan. '50	Eastern Car
Fraser-Brae Engineering Co.	4	Flat	140,000	52	6	Steel	53,800	March	October	Nat'l Steel Car
Northern Alberta	6	Hopper	140,000	..	..	Steel	50,700	April	September	Nat'l Steel Car

* Not listed last year.

Equipment Prices Reported in 1949

The accompanying tables list unit prices of typical locomotives and freight-train and passenger-train cars purchased in this country last year by Class I railroads. As in past years the information was obtained from Interstate Commerce Commission reports authorizing railroads to issue and sell equipment trust certificates and notes, proceeds from the sale of which were used in acquiring the equipment.

Differences in the types and numbers of specialties ordered and in the types of materials specified are primarily responsible for the apparently wide variations in the costs of similar kinds of equipment. Material and labor costs continued to rise during 1949, and, therefore, equipment ordered early in the year may have cost less than identical cars or locomotives bought late in the year. Many of the I.C.C. authorizations noted the listed unit prices were based on manufacturing costs at the time the equipment was ordered and were subject to increase.

Passenger-Train Car Prices

No. Bought	Type	Construction	Price
2	Baggage	Steel	\$ 60,723
6	Double bedroom-Bar-Lage.	Steel	122,632
6	Drawing room-Roomette	Steel	118,834
20	Coach	Steel	92,619
10	Dining	Steel	120,861
10	Bedroom-Roomette	Steel	150,000
4	Suburban-Coach	Steel	105,000
8	Suburban-Coach	Steel	104,000
10	Coach	Steel	98,000
4	Bedroom-Roomette	Steel	145,021
2	Combine	Steel	116,413
3	Baggage	Steel	70,848
3	Bag-Mail	Steel	78,116
8	Coach	Steel	119,248
2	Kitchen-Dining	Steel	182,721
7	Sleeping	Steel	115,000
2	Double bedroom-Cabin	S. Steel	126,821
31	Single bedroom	S. Steel	142,575
4	Double bedroom-Lnge.-Obs.	S. Steel	144,850
3	Bedroom-Lnge.-Obs.	S. Steel	149,800
2	Double bedroom-Buff.-Lnge.-Obs.	Steel	155,242
13	Double bedroom-Roomette	Steel	130,293
10	Coach	Steel	106,140
2	Roomette-Double bedroom	Steel	134,038
14	Single bedroom	Steel	148,000
3	Double bedroom-Single bed.	Steel	127,000

Passenger-Train Car Prices (Cont.)

No. Bought	Type	Construction	Price
11	Double bedroom-Duplex	Steel	143,000
11	Double bedroom-Buff.-Lnge.	Steel	128,000
7	Draw. rm.-double bed.-Bar-Lnge.	Steel	132,000
3	Draw. rm.-Compt.-Dble. bed.-Buff.-Lnge.-Obs.	Steel	134,000
25	Single bedroom	Steel	148,000
6	Single bedroom-Double bed.	Steel	144,000
14	Single bedroom-Double bed.	Steel	127,000
9	Single bedroom	Steel	148,000
2	Coach	Steel	105,000
3	Coach	Steel	113,000
3	Double bedroom-Buff.-Lnge.	Steel	130,000
6	Double bedroom-Single bed.	S. Steel	140,000
24	Bedroom-Roomette	Steel	121,900
11	Bedroom-Roomette	Steel	124,500
6	Coach	Steel	116,700
4	Lounge-Bedroom	Steel	127,250
2	Bedroom-Obs.	Steel	126,700
2	Baggage-Dorm.	Steel	85,200
26	Coach	Steel	100,800
8	Dining	Steel	125,200
4	Baggage-Mail	Steel	79,000
1	Roomette-Double bed.	Steel	143,147
7	Chair	Steel	121,868
1	Sleeping	Steel	128,882
1	Dorm.-Bag.	Steel	90,646
1	Dining	Steel	141,836
2	Sleeping-Lnge.	Steel	116,965
5	Coach	Steel	86,390
1	Bag.-Lunch counter-Lnge.	S. Steel	191,910
1	Dining	S. Steel	203,072
1	Dome type-Parlor-Obs.	S. Steel	228,458
3	Dome type-Coach	S. Steel	190,794
1	Dining	S. Steel	193,826
1	Bag.-Lunch counter-Lnge.	S. Steel	188,317
3	Dome type Coach	S. Steel	191,187
10	Bedroom-Roomette	Steel	129,375

Freight-Train Car Prices

No. of Cars	Type	Construction	Capacity	Price
1,800	Box	Steel	50-ton	\$4,340
1,000	Hopper	Steel	50-ton	3,458
145	Pulpwood	Steel	50-ton	3,999
1,000	Hopper	Steel	70-ton	4,350
675	Hopper	Steel	70-ton	4,627
75	Cov. Hopper	Steel	70-ton	6,575
500	Box	Steel	50-ton	4,037
100	Cov. Hopper	Steel	70-ton	5,303
30	Box	Steel	50-ton	4,955
15	Stock	.....	.....	4,540
100	Cov. Hopper	Steel	70-ton	6,600
450	Triple Hopper	Steel	70-ton	4,415
500	Gondola	Steel	70-ton	5,500
100	Cov. Hopper	Steel	70-ton	6,037
300	Box	Steel	50-ton	4,761
200	Gondola	Steel	50-ton	3,944
500	Hopper	Steel	50-ton	4,320
300	Box	Steel	50-ton	5,150
100	Cov. Hopper	Steel	70-ton	6,420
500	Gondola	Steel	50-ton	5,813
200	Gondola	Steel	70-ton	5,907
50	Gondola	Steel	70-ton	6,810
25	Cov. Hopper	Steel	70-ton	6,494
700	Box	Steel	50-ton	4,850
1,750	Hopper	Steel	50-ton	4,591
100	Hopper	Steel	70-ton	6,560
750	Hopper	Steel	50-ton	4,600
1,000	Hopper	Steel	50-ton	4,421
25	Cov. Hopper	Steel	70-ton	7,000
100	Cov. Hopper	Steel	70-ton	7,000
500	Hopper	Steel	50-ton	3,802
500	Gondola	Steel	50-ton	3,906
100	Cov. Hopper	Steel	70-ton	7,200
500	Hopper	Steel	55-ton	4,650
500	Gondola	Steel	70-ton	6,300
400	Gondola	Steel	70-ton	6,650
500	Gondola	Steel	70-ton	5,280
500	Gondola	Steel	70-ton	6,140
100	Gondola	Steel	70-ton	6,720
1,500	Hopper	Steel	55-ton	4,020
500	Hopper	Steel	55-ton	4,540
500	Hopper	Steel	55-ton	4,080
200	Box	Steel	50-ton	6,243
250	Ballast	Steel	70-ton	5,000
50	Tank	Steel	16,000 g.	6,740
750	Hopper	Steel	50-ton	4,310
700	Hopper	Steel	55-ton	3,855
130	Tank	.....	10,000 g.	5,377
350	Cov. Hopper	Steel	70-ton	5,770
500	Gondola	Composite	50-ton	5,512
600	Flat	Composite	50-ton	4,171
400	Gondola	Composite	50-ton	5,505
40	Gondola	Composite	50-ton	4,203
802	Flat	Composite	70-ton	5,157
100	Gondola	Composite	50-ton	5,544
660	Gondola	Composite	50-ton	4,523
650	Flat	Steel	70-ton	5,291
100	Gondola	Steel	50-ton	6,208

Locomotive Prices

No. Bought	Type	Service	Horsepower or tractive force	Price
7	Diesel-Elec.	Freight	6,000-hp.	\$632,418
3	Diesel-Elec.	Rd.-Sw.	5,500-hp.	169,978
5	Diesel-Elec.	Rd.-Sw.	1,500-hp.	161,413
22	Diesel-Elec.	Sw.	1,000-hp.	97,969
6	Diesel-Elec.	Sw.	1,000-hp.	101,223
11	Diesel-Elec.	Sw.	1,000-hp.	99,619
12	Diesel-Elec.	Sw.	1,000-hp.	97,814
31	Diesel-Elec.	Sw.	1,000-hp.	97,882
12	Diesel-Elec.	Sw.	1,200-hp.	97,969
2	Diesel-Elec.	Rd.-Sw.	1,500-hp.	150,193
10	Diesel-Elec.	Road	1,500-hp.	674,094
4	Diesel-Elec.	Sw.	1,000-hp.	97,650
5	Diesel-Elec.	Rd.-Sw.	1,500-hp.	177,475
32	Diesel-Elec.	A-Unit Frt.	1,500-hp.	173,730
13	Diesel-Elec.	B-Unit Frt.	1,500-hp.	151,170
4	Diesel-Elec.	Sw.	1,000-hp.	97,985
2	Diesel-Elec.	Transfer	2,000-hp.	198,875
8	Diesel-Elec.	Pass.	2,000-hp.	241,500
6	Diesel-Elec.	Freight	4,500-hp.	433,413
1	Diesel-Elec.	Transfer	2,000-hp.	194,244
4	Diesel-Elec.	B-Unit Frt.	1,500-hp.	156,788
3	Diesel-Elec.	Freight	3,000-hp.	343,104
3	Diesel-Elec.	Pass.	1,500-hp.	175,300
2	Diesel-Elec.	Sw.	1,000-hp.	102,693
2	Diesel-Elec.	Sw.	1,000-hp.	102,500
2	Diesel-Elec.	Pass.	3,000-hp.	350,000
1	Diesel-Elec.	Transfer	2,000-hp.	207,201
8	Diesel-Elec.	Sw.	1,000-hp.	102,500
8	Diesel-Elec.	Rd.-Sw.	1,500-hp.	140,500
2	Diesel-Elec.	Sw.	1,000-hp.	89,500
6	Diesel-Elec.	Freight	4,500-hp.	460,399
14	Diesel-Elec.	Sw.	1,000-hp.	95,026
5	Diesel-Elec.	Sw.	660-hp.	73,925
7	Diesel-Elec.	Transfer	2,000-hp.	199,836
1	Diesel-Elec.	Sw.	1,000-hp.	90,007
4	Diesel-Elec.	Freight	4,500-hp.	415,763
2	Diesel-Elec.	Freight	3,000-hp.	283,748
4	Diesel-Elec.	Sw.	1,000-hp.	89,616
1	Diesel-Elec.	Rd.-Sw.	1,500-hp.	134,235
6	Diesel-Elec.	Sw.	1,000-hp.	103,069
8	Diesel-Elec.	Sw.	1,000-hp.	103,773
4	Diesel-Elec.	Rd.-Sw.	1,500-hp.	146,731
10	Diesel-Elec.	Freight	3,000-hp.	337,083
2	Diesel-Elec.	Freight	3,000-hp.	333,375
9	Diesel-Elec.	Freight	4,500-hp.	483,244
3	Diesel-Elec.	Rd.-Sw.	1,000-hp.	109,485
4	Diesel-Elec.	Rd.-Sw.	1,000-hp.	98,532
6	Diesel-Elec.	Sw.	1,000-hp.	98,123
5	Diesel-Elec.	Br. Line	1,500-hp.	153,951
3	Diesel-Elec.	Pass.	3,000-hp.	337,264
2	Diesel-Elec.	Suburban	1,500-hp.	145,335
9	Diesel-Elec.	Suburban	1,500-hp.	159,000
10	Diesel-Elec.	Sw.	600-hp.	76,000
7	Diesel-Elec.	Rd.-Sw.	1,500-hp.	153,522
5	Diesel-Elec.	Rd.-Sw.	1,500-hp.	145,039
10	Diesel-Elec.	Sw.	1,000-hp.	102,000
6	Diesel-Elec.	Freight	3,000-hp.	320,000
7	Diesel-Elec.	Freight	6,000-hp.	658,959
2	Diesel-Elec.	Freight	6,000-hp.	661,200
5	Diesel-Elec.	Pass.	2,000-hp.	216,650
2	Diesel-Elec.	Rd.-Sw.	1,500-hp.	149,950
4	Diesel-Elec.	Sw.	1,000-hp.	102,775
5	Diesel-Elec.	Sw.	1,000-hp.	102,200
9	Diesel-Elec.	Pass.	2,000-hp.	207,500
5	Diesel-Elec.	Rd.-Sw.	1,500-hp.	144,450
16	Diesel-Elec.	Sw.	1,000-hp.	97,500
2	Diesel-Elec.	Sw.	1,000-hp.	97,775
4	Diesel-Elec.	Sw.	750-hp.	84,000
6	Diesel-Elec.	Sw.	1,000-hp.	97,500
5	Diesel-Elec.	Sw.	660-hp.	75,900
2	Diesel-Elec.	Transfer	2,000-hp.	187,498
16	Diesel-Elec.	Sw.	1,000-hp.	108,505
2	Diesel-Elec.	Freight	4,500-hp.	449,931
1	Diesel-Elec.	Pass.	1,500-hp.	156,009
10*	Diesel-Elec.	Sw.	380-hp.	53,000

The policy of the federal government in the regulation of transportation has been stated and restated in the various transportation acts, but the laws have not operated to give effect to those ideals. The underlying concept in the regulatory law is that the railroads are a monopoly and must therefore be controlled in the public convenience and necessity. It should be abundantly clear by now that the railroads are not monopolies free from competition either from other railroads or from different transportation agencies. In the treatment of other public utilities, such as the electric, gas, and telephone companies, the customary minimum rate of return has been considered to be 6 per cent on the net investment after depreciation. The record shows that the railroads have had an average return of only 3.62 per cent for the past 27 years. This record is not consistent with the policies expressed in National Transportation Acts. —From an address to the Detroit, Mich., Traffic Club by Arthur K. Atkinson, president of the Wabash.

A Good Year in COMMUNICATIONS

Substantial gains made over 1948 in the amount of new printing telegraph and long-distance telephone circuits and carrier equipment installed on the railroads in the United States and Canada

By **MAURICE PEACOCK**
Associate Editor—Signals and Communications

Considering all factors, railroad communications construction in the United States and Canada made a favorable showing during 1949. There were decreases in railroad and commercially owned pole-line construction, railroad owned copper line wire and telephone train-dispatching mileage, and in yard loud-speaker and yard radio and road radio installations, compared with 1948. On the other hand, there were marked increases in new jointly owned pole line, commercial copper wire, printing telegraph and long-distance telephone circuits, and carrier equipment for superimposing these latter facilities on existing line wires. A tabular record for the year supplements these remarks.

The total mileage of all new or rebuilt pole line during 1949—railroad, commercially and jointly owned—was 11,348.8 mi., compared with 7,908.3 mi. in 1948—an increase of 3,440.5 mi. There was a decrease of 4,274.6 mi. of new railroad and commercially owned copper wire placed in service during the year, 19,833 mi. having been installed in 1948 and 15,558.4 mi. in 1949.

Long-Distance Phones Up 13,023 Mi.

In 1949, a total of 1,142 mi. of road was equipped with telephone train dispatching compared with 1,445 mi. in 1948. New telegraph, printing telegraph and long-distance telephone circuit mileage, on the other hand, showed substantial increases, as compared with such facilities installed during 1948. For example, 38,109.6 mi. of new long-distance phone circuits were placed in service in 1949, compared with 25,086.7 in 1948—an increase of 13,022.9 mi.; 45,061 mi. of new telegraph circuits, compared with 24,395.3 in 1948—an increase of 20,665.7 mi.; and 38,683.8 mi. of printing telegraph circuits, compared with 31,035.9 in 1948—an increase of 7,647.9 mi.

New mileage of communications circuits derived by the use of carrier equipment in 1949 was well over twice the amount so derived in 1948. A total of 113,960.2 mi. of new circuits obtained by carrier were placed in service during 1949, in comparison with 47,190.5 mi. in 1948—an increase of 66,769.7 mi.

The marked increases in the new or rebuilt pole line figures, and those for new telephone and telegraph circuit mileage and carrier equipment, were the result largely of activities on the Canadian National, which owns and operates commercial telegraph facilities. The

Comparison of Communications Facilities Installed on the Railroads in the United States and Canada During 1949 and 1948

	1949	1948
Miles of new or rebuilt pole line:		
Railroad Owned.....	4,271.4	5,103.7
Commercially Owned.....	1,496.2	1,703.0
Jointly Owned.....	5,581.2	1,328.6
Totals.....	11,348.8	7,908.3
Mileage of new copper line wire:		
Railroad owned.....	10,458.2	18,488.3
Commercially owned.....	5,100.2	1,510.7
Totals.....	15,558.4	19,833.0
Increase in miles of road dispatched by telephone	1,142.6	1,445.6
New mileage of long-distance telephone circuits	38,109.6	25,086.7
New mileage of telegraph circuits.....	45,061.0	24,395.3
New mileage of printing telegraph circuits.....	38,683.8	31,035.9
New mileage of communications circuits derived by use of carrier.....	113,960.2	47,190.5
Yard loud-speakers:		
Number of control points.....	114	161
Number of two-way speakers.....	936	1,016
Number of paging speakers.....	591	775
Total number of speakers.....	1,527	1,791
Yard radio and inductive communications:		
Number of locomotives equipped.....	129	240
Number of fixed stations.....	21	43
Road train communication:		
Miles of road.....	6,690.2	4,768.8
Number of locomotives equipped.....	132	168
Number of cabooses or other cars.....	75	129
Number of fixed wayside stations.....	81	71

Telegraph and Printing Telegraph Placed in Service in 1949

Railroad	New Mileage of Telegraph Circuits	New Mileage of Printing Telegraph Circuits
A. T. & S. F.....		1,867.0
B. & O.....	1,022.0	1,022.0
C. N.....	31,514.0	8,793.0
C. P.....	11,737.0	15,377.1
C. B. & Q.....	170.0	
C. G. W.....		1,040.0
D. M. & I. R.....		79.8
G. N.....		123.0
G. M. & O.....		1,121.0
I. C.....	567.0	1,068.0
M. P.....		472.1
(G. C. L.).....	51.0	93.0
N. Y. N. H. & H.....		1,773.0
N. & W.....		313.0
N. P.....		1,287.0
Penna.....		683.8
Southern.....		781.8
S. P.....		566.2
(T. & N. O.).....		1,650.0
W. P.....		573.0
Totals.....	45,061.0	38,683.8

Yard Loud-speaker Installations Made During 1949

Railroad and Location	No. of Control Points	No. of Two-Way Speakers	No. of Paging Speakers	Railroad and Location	No. of Control Points	No. of Two-Way Speakers	No. of Paging Speakers
A. T. & S. F.				N. Y. C.			
Argentine, Kan.....	7	106	79	(East)			
Bakersfield, Cal.....	1	13	5	Rochester, N. Y., division dispatcher's office, signal stations 25, 25-A, 27, 29, 29-A and 30	1	6	
Barstow, Cal.....	1	18	1	(West)			
Emporia, Kan.....	1		63	Ashtabula Docks, Ohio.....	1	6	
Kansas City, Mo.....	1	12	15	Chicago, Ill.....	1	5	
B. & M.				Indiana Harbor, Ind., Root Street Coach Yards.....	1	5	
Somerville, Mass.....	4		17	(M. C.)			
C. P.				Detroit, Mich., Belt Line Jct.....	1	2	
Winnipeg, Man.....	1	31		N. & W.			
C. & O.				Lamberts Point, Va.....	1	70	
(Ches. Dist.)				P. F.			
Newport News, Va.....	2		18	Wilmington, Cal.....	2	2	2
Newport News, Va.....	2		4	Butte Street Yard, Cal.....	1	4	3
Russell, Ky.....	9		48	St. L.-S. F.			
C. B. & Q.				Tulsa, Okla.....	1	66	9
Kansas City, Mo.....	1	40		S. A. L.			
Council Bluffs, Iowa.....			6	Richmond, Va.....	4	12	19
Creston, Iowa.....			4	Southern Pines, N. C.....	1		3
Alliance, Neb.....			14	Southern			
St. Joseph, Mo.....			12	Birmingham, Ala., Finley Yard....	5	10	
C. G. W.				Chattanooga Freight House, Tenn....	5	10	
Oelwein, Iowa.....	1	6	6	E. St. Louis, Ill., Coapman Yard....	3	7	6
C. M. St. P. & P.				E. St. Louis Freight House, Ill.....	1	10	
Savanna, Ill.....	2	9	12	John Sevier Yard, Tenn.....	4	50	
Chicago, Ill.....	5	15	15	Louisville Freight House, Ky.....	1	8	
Dubuque, Iowa.....	1	1	1	Louisville, Ky.....	1	2	
Milwaukee, Wis.....	8	8		Selma Yard, Ala.....	1		5
D. & R. G. W.				Spencer Yard, N. C.....		19	
Roper, Utah.....	2	74	24	(C. S. Co.)			
Grand Jct., Colo.....	1	12	7	Chattanooga Passenger Station, Tenn.....	6		3
Pueblo, Colo.....	1	68	20	(C. N. O. & T. P.)			
Denver, Colo.....	1	44	20	Chattanooga Diesel Shop, Tenn....	1		12
Erie				Cincinnati, Ohio.....	3	6	
Crofton, N. J.....	2		4	Danville, Ky.....	1		6
Marion, Ohio.....	1	13	12	S. P. & S.			
G. N.				Wishram, Wash.....	1	4	5
Allouez Yard, Wis.....		3		U. P.			
Allouez Dock, Wis.....	1		10	Kansas City, Kan. and Mo.....	1	36	7
G. M. & O.				W. P.			
Chicago, Ill.....	1	25	4	Stockton, Cal.....	1	20	40
I. C.				Totals.....	114	936	591
Fulton, Ky.....	3		6				
Memphis, Tenn.....	1		12				
M. P.							
St. Louis, Mo.....	1	17	4				
Little Rock, Ark.....	2	85	4				

New Mileage of Telephone Train Dispatching and Long-Distance Telephone Service—1949

Railroad	Increase in Miles of Road Dispatched by Telephone	New Mileage of Long-Distance Telephone Circuits
A. T. & S. F.		319.0
(P. & S. F.)	37.8	37.8
(G. C. & S. F.)		667.0
A. C. L.	212.5	982.5
B. & O.		1,654.0
B. & M.		181.7
C. N.	60.0	12,115.0
C. P.		3,409.8
C. & O. (Ches. Dist.)	61.0	
C. G. W.		1,040.0
D. T. & I.		54.0
D. M. & I. R.		79.8
E. J. & E.	67.0	280.0
Erie	39.2	
G. M. & O.		165.0
I. C.		2,264.0
L. V.		260.0
L. & N.	20.0	667.0
M.-K.-T.		561.0
M. P.	53.5	599.8
(G. C. L.)	19.0	
N. Y. C.		
(East)		1,725.0
(West)	14.0	1,110.0
(B. & A.)		600.0
(C. C. C. & St. L.)		2,078.0
(M. C.)		2,122.9
(P. & L. E.)		61.7
N. & W.		369.0
N. P.	122.0	397.0
Penna.	69.6	
S. A. L.		2,529.0
Southern	102.0	
(T. & N. O.)		533.7
U. P.		468.8
Wabash	265.0	426.0
W. P.		141.0
W. & L. E.		210.0
Totals.....	1,142.6	38,109.6

New Circuit Miles Derived In 1949 by Superimposing Carrier on Existing Line Wires

Railroad	New Mileage of Long Distance Telephone Circuits	New Mileage of Telegraph Circuits	New Mileage of Printing Telegraph Circuits
A. T. & S. F.	319.0		1,502.0
A. C. L.	557.5		
B. & O.	1,654.0	1,022.0	1,022.0
B. & M.	114.6		
C. N.	11,831.0	30,624.0	7,819.0
C. P.	3,258.8	11,737.0	14,881.1
C. G. W.	1,040.0		1,040.0
D. T. & I.	54.0		
D. M. & I. R.	79.8		79.8
E. J. & E.	140.0		
G. M. & O.			472.0
I. C.	1,475.0	567.0	1,068.0
L. V.	260.0		
L. & N.	667.0		
M.-K.-T.	561.0		
M. P.	599.8		472.1
(G. C. L.)		51.0	
N. Y. C.			
(East)	1,725.0		
(West)	740.0		
(B. & A.)	600.0		
(C. C. C. & St. L.)	2,078.0		
(M. C.)	2,122.9		
(P. & L. E.)	61.7		
N. Y. N. H. & H.			1,628.0
N. & W.	369.0		313.0
N. P.	397.0		1,287.0
Penna.			205.9
S. A. L.	2,529.0		637.5
Southern			566.2
(T. & N. O.)	533.7		1,650.0
U. P.	468.8		
Wabash	344.0		
W. P.	141.0		321.0
W. & L. E.	210.0		
Totals.....	34,931.6	44,010.0	35,018.6

Canadian National took over the communication facilities in Newfoundland, which were previously operated by the Newfoundland government, when that territory was united with Canada.

New Yard Loud-speakers and Radio

The number of two-way and paging loud-speakers installed in yard communication systems dropped from 1,791 installed in 1948 to 1,527 in 1949—a decrease

of 264 units. Similarly, the number of new control points added dropped 47, from 161 in 1948 to 114 in 1949. The number of two-way speakers installed in 1949 was 936, compared with 1,016 in 1948, and the number of paging speakers in 1949 was 591, in comparison with 775 in 1948—decreases of 80 and 184 units, respectively.

As to yard radio and inductive communications in tallations, the number of additional locomotives equipped decreased 111, from 240 in 1948 to 129

Permanent Installations of Yard Radio and Inductive Communications Systems Placed in Service in 1949

Railroad	Location	No. of Locomotives Equipped	No. of Fixed Stations	Space or Inductive Equipment	Equipment Manufacturer	Frequency Allocated by F. C. C.
A. T. & S. F.	Argentine, Kan.	3	1	Space	Capehart-Farnsworth	160.41 mc.
	Chicago, Ill.	4	..	Space	Bendix	160.65 mc.
	Richmond, Cal.	2	..	Space	Bendix	161.37 mc.
	San Bernardino, Cal.	7	1	Space	Bendix	161.37 mc.
(G. C. & S. F.)	Fort Worth, Tex.	4	1	Space	Bendix	161.37 mc.
A. C. L.	Jacksonville, Fla.	10	1	Space	Bendix	160.29 mc.
B. & O.	Chicago, Ill.	1	1	Space	G. R. S.	159.93 mc.
B. & M.	Mechanicville Yard, N. Y.	4	..	Space	Doolittle & G. R. S.	159.93 mc.
C. & O. (Ches. Dist.)	Newport News, Va.	14*	1	Space	Bendix & Doolittle	160.89 mc.
	Walbridge, Ohio	1	..	Space	Westinghouse	161.37 mc.
C. & E. I.	Evansville, Ind.	4	..	Space	Capehart-Farnsworth	161.61 mc.
D. & R. G. W.	Salt Lake City, Utah	4*	1	Space	Motorola & Doolittle	160.83 mc.
D. M. & I. R.	Mitchell, Minn.	10	1	Space	Ry. Radio-telo.	159.75 mc.
Erie	Crofton, N. J.	9	1	Space	Capehart-Farnsworth	159.09 mc.
I. C.	New Orleans, La.	4*	1	Space	Motorola & Doolittle	160.59 mc.
N. Y. C. & St. L.	Cleveland, Ohio	7	1	Space	Capehart-Farnsworth	161.49 mc.
	Chicago, Ill.	2	2	Space	Capehart-Farnsworth	161.25 mc.
	St. Louis, Mo.	4	1	Space	Bendix	160.17 mc.
	Madison, Ill.	3	1	Space	Bendix & Capehart-Farnsworth	161.49 mc.
	Toledo, Ohio	3	1	Space	G. R. S.	161.55 mc.
N. Y. N. H. & H.	Hartford, Conn.	4	..	Space	Bendix	161.13 mc.
St. L.-S. F.	Tulsa, Okla.	3	1	Space	Comco	159.69 mc.
S. A. L.	Miami, Fla.	5	1	Space	G. R. S.	160.89 mc.
		1†	..	Space	G. R. S.	161.49 mc.
Southern	Birmingham, Ala., Finley Yd.	6	1	Space	G. R. S.	161.49 mc.
(A. G. S.)	Birmingham, Ala.	2	..	Space	G. R. S.	161.49 mc.
(N. O. T. Co.)	New Orleans, La.	7	1	Space	Capehart-Farnsworth	160.29 mc.
U. P.	Salt Lake City, Utah	2	1	Space	Capehart-Farnsworth	160.29 mc.
	Los Angeles, Cal.	2	1	Space	Capehart-Farnsworth	160.29 mc.
Totals		129	21			

Legend: *Walkie-Talkie Units.
†Automobiles.

Permanent Installations of Road Train Communication Placed in Service in 1949

Railroad	From	To	Miles of Road	No. of Loco-motives	No. of Cabooses or other Cars	No. of Fixed Wayside Stations	Space or Inductive Equipment	Manu-fac-turer	Power Supply on Caboose	Frequency Allocated by F. C. C.
A. T. & S. F.	Bakersfield, Cal.	Barstow, Cal.	141.0	9	26	..	Space	Bendix	Diesel Gen.	160.65 mc.
C. B. & Q.	Kansas City, Mo.	St. Louis, Mo.	280.0	30	3	..	Space	Bendix	Axle Gen.	159.69 mc.
C. M. St. P. & P.	Milwaukee, Wis.	Kansas City, Mo.	523.0	2	1	..	Space	Bendix	Axle Gen.	158.73 mc.
	Minneapolis, Minn.	Harlowton, Mont.	914.0	5	5	..	Space	Bendix	Axle Gen.	158.73 mc.
C. S. S. & S. B.	Keasington, Ill.	South Bend, Ind.	75.6	3	6	3	Space	Motorola & Bendix	Rect. a.c.	158.43 mc.
D. L. & W.	Hoboken, N. J.	Buffalo, N. Y.	396.0	1	1	..	Space	Bendix	Preco Dr. Altern-rect-12V. battery	161.37 mc.
D. & R. G. W.	Denver, Colo.	Salt Lake City, Utah	570.0	3	3	..	Both	Bendix & Harmon	Diesel Eng. & Axle Gen.	159.81 mc.
D. M. & I. R.	Sherwood, Minn.		..	..	..	1	Inductive	Ry. Radio-telo.		
Erie	Salamanca, N. Y.	Jersey City, N. J.	524.2	11	17	36	Space	Capehart-Farnsworth	Stor. Bat.	160.05 mc.
G. M. & O.			..	5	7	..	Space	Motorola & Bendix	Axle Gen.	159.09 mc.
K. C. S.	Kansas City, Mo.	Port Arthur, Tex.	789.0	4	2	1	Inductive	Harmon	Rect. a.c.	161.73 mc.
(L. & A.)	Hope, Ark.	Pineville Jct., La.	194.0	..	..	3	Inductive	Harmon	-6 volt	
	Shreveport, La.	New Orleans, La.	505.0	4	..	3	Inductive	Harmon		
N. Y. C. & St. L.	Madison, Ill.	Bellevue, Ohio	463.6	1	..	2	Space	Bendix		161.25 mc.
	Chicago, Ill.	Bellevue, Ohio	264.6	1	..	3	Space	Capehart-Farnsworth		161.25 mc.
	Buffalo, N. Y., Angola, N. Y., Cleveland, Ohio, Lorain, Ohio; and Toledo, Ohio		..	..	..	5	Space	Bendix & Capehart-Farnsworth		
N. P.	Yakima, Wash.	Auburn, Wash.	139.0	2	..	..	Space	Bendix	Axle Gen.	161.25 mc.
Penna.			852.0	47	..	21	Inductive	Union	Stor. Bat.	161.01 mc.
U. P.	Los Angeles, Cal.	Riverside, Cal.	59.2	4	4	3	Space	Motorola	Diesel Eng. Gen.	159.93 mc.
										160.05 mc.
										160.17 mc.
Totals			6,690.2	132	75	81				

installed in 1949, and the number of new fixed stations dropped 22, from 43 installed in 1948 to 21 added in 1949. The miles of road under road train communication jumped from 4,768.8 mi. placed in service in 1948 to 6,690.2 in 1949—an increase of 1,921.4 mi. During 1949, a total of 81 fixed wayside stations were installed, compared with 71 in 1948. On the other hand, 132 more locomotives were equipped in 1949, compared with 168 in 1948. In 1949, radio equipment was installed on 75 cabooses and other cars, a reduction of 129 as compared with 1948.

Several roads reported installation during the year of telephones, public address and musical equipment on passenger trains for the convenience and entertainment of passengers. The Santa Fe, for example, equipped four miscellaneous cars, operating in trains between Chicago and Los Angeles, Cal., with Capehart-Farnsworth four-channel, medium-level equipment, and 12 dining cars, operating between the same points, with similar equipment for luncheon and dinner music. With

equipment furnished by the Automatic Electric Company and Capehart-Farnsworth, the Baltimore & Ohio equipped its new "Columbian," operating between Washington, D. C., and Chicago, with wire recorders, broadcast receivers and public address and intercommunicating telephone systems. Sixteen cars are equipped with all of these facilities, and four locomotives are connected in the telephone system.

The New Haven equipped 21 cars, operating in various trains between New York, Boston, Mass., and Springfield, and Waterbury, Conn., with public address equipment furnished by the Turner Company, University Loudspeakers, Inc., and Stromberg-Carlson. The Southern Pacific reported that it had installed Western Electric public radiotelephone service in two cars of its "Lark" trains, operating between San Francisco, Cal., and Los Angeles. This service operates in conjunction with the general highway communication service of the telephone company in the territory through which the trains operate.

SIGNAL CONSTRUCTION at High Level

New work in 1949, compared with 1948, included more interlockings, retarders, crossing protection and automatic block, but a little less centralized traffic control

By JOHN H. DUNN
Editor—Signals and Communications

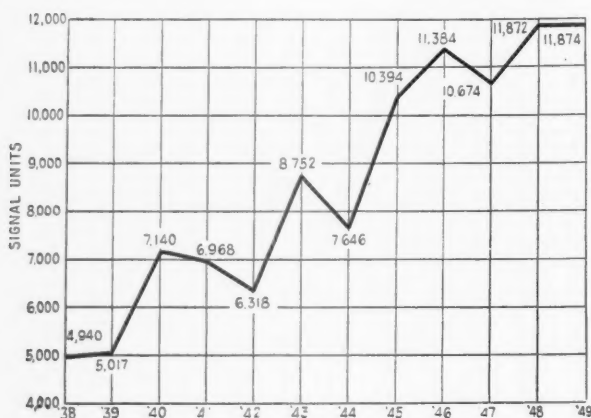
During 1949, the construction of signaling on the railroads in the United States and Canada continued at a high level, a total of 11,874 units being placed in service, which is 2 units more than the 11,872 for 1948, the previous peak. The 11,874 units for 1949 is 3,047 more than the annual average of 8,827 units for the 11 years, 1939 to 1949, inclusive. The new construction for 1949, compared with 1948, included more automatic block,

retarders and highway crossing protection, but slightly less centralized traffic control.

More Automatic Block

In 1949, automatic block signaling was installed on 1,869 track miles and included 1,974 signals. This compares with the 1,772 mi. and 1,711 signals installed in 1948. The outstanding installations in 1949 were 333 mi. on the Seaboard Air Line, 135 mi. on the Spokane, Portland & Seattle, 104 mi. on the Kansas City Southern, and 103 mi. on the Soo Line. These projects may be considered as in compliance with the Interstate Commerce Commission order discussed in another article on signaling in this issue. The accompanying table of automatic block signaling installed in 1949 omits some small projects involving the replacement of only a few signals, but all installations are included in the totals in the table.

During 1949, the Union Pacific, in connection with existing wayside signaling, installed controls for continuous cab signaling on 135 mi. of double track between Rawlins, Wyo., and Green River. This project consisted primarily of replacing conventional d.c. neutral track circuits with coded track circuits, and completes an installation of coded cab signaling on 251 mi. of double track between Laramie, Wyo., and Green



River. Also, work has been started on 279 mi. of coded cab signaling between Omaha, Neb., and North Platte. In the table showing comparisons of signaling units installed each year, the wayside cab signal construction in 1949 is counted as one unit for each track mile so equipped.

Less Centralized Traffic Control

Interlocking construction continued actively in 1949—about the same number of new plants being installed as in 1948, but some of the plants were not so large, with the result that the total number of signals and switches involved was 191 less. On the other hand, increased activity was shown in the reconstruction of old plants, including the installation of new control machines, signals and switch machines, so that 864 units were required, an increase of 199 over 1948. Also, in more instances, existing mechanical plants at outlying railroad crossings were replaced by automatic interlockings, these including 132 signals. Altogether, a total of 1,859

switches and signals were installed at interlockings in 1949, a slight increase over the 1,819 in the year previous.

Centralized traffic control was installed on 1,317 track miles in 1949, involving 496 power switch machines and 2,018 signals. This represents a small reduction from the 1948 construction, which included 1,552 track miles, 565 switch machines and 2,463 signals. An outstanding 1949 project was on 112 mi. of single track between Stockton, Cal., and Oroville on the Western Pacific. This project, together with others previously in service and another under way, will provide a total of 438 mi. of continuous C.T.C. between Oakland, Cal., and Gerlach, Nev. On the Union Pacific, the 49 mi. of C.T.C. installed in 1949 between Los Angeles, Cal., and Riverside, completes such signaling on all of the 805 mi. between Salt Lake City and Los Angeles, except for the 100 mi. of double track between Barstow, Cal., and San Bernardino.

Many of the 1949 C.T.C. projects are in territory where no signaling was in service before and on which

New Automatic Block Signaling Placed in Service in 1949

Railroad and Location	Miles of Road	Number of Signals	Manufacturer	Railroad and Location	Miles of Road	Number of Signals	Manufacturer
A. T. & S. F.				M. St. P. & S. S. M.			
Turner, Kan.-Morris.....	2.3d	4	Union	Spencer, Wis.-Neenah.....	103.4s	204	G. R. S.
LaJunta, Colo.....	1.0s	13	Union	D. S. S. & A.			
	0.2d			M. P. 154.7.....	0.3d	7	G. R. S.
Brownwood, Tex.-Nolanville.....	72.0s	96	Union	M. P. 155.0.....	0.4s	3	G. R. S.
A. C. L.				N. Y. C.			
Whitakers, N. C.-Rocky Mount...	11.0d	14	Union	Corfu, N. Y.-Dellwood.....	8.7f	24	G. R. S.
Contentnea, N. C.-Selma.....	19.0d	20	Union	Herkimer, N. Y.-Little Falls.....	7.2f	22	G. R. S.
B. & O.				Mich. Central			
Dolton, Ill.-State Line.....	5.0d	12	G. R. S.	Detroit, Mich.-Wayne.....	15.2d	29	G. R. S.
B. & M.				Calumet Park, Ill.-Kensington...	5.1d	4	G. R. S.
Peabody, Mass.....		1	G. R. S.	Niles, Mich.-Furnessville, Ind...	44.7d	80	G. R. S.
Gloucester, Mass.....		1	G. R. S.	B. & A.			
Middlesex, Mass.....	1.2s	1	G. R. S.	Newton, Mass.....	0.9f	4	G. R. S.
Scotia, N. Y.-Rotterdam.....	1.2s	1	Union	Chester, Mass.....	1.3d	2	G. R. S.
Reillys, N. Y.-Troy.....	1.3s	1	Union	C. C. C. & St. L.			
Silver, Mass.-Northfield.....	11.7s	16	G. R. S.	Berwick, Ohio-Kenton.....	30.9s	19	G. R. S.
C. N.				N. P.			
Spences Br., B. C.-Hicks.....	52.0s	85	G. R. S.	Helena, Mont.-M. P. 5.....	1.0s	7	G. R. S.
C. & O.					2.5d		
P. M. Dist.				P. E.			
Grand Rapids, Mich.....	1.0d	4	G. R. S.	Arden Jct., Cal.-Glendale.....	1.0s	4	Union
C. & I. M.				Penna.			
Kelsey, Ill.-Quiver.....	5.4s	10	Union	Trafford, Pa.-Wilmerding.....	3.2s	2	Union
	0.8d			Reading			
C. M. St. P. & P.				Port Clinton, Pa.-Tamaqua.....	20.1d	30	Union
Janesville, Wis.-Madison.....	40.4s	37	Union	Tamaqua Tunnel, Pa.-Mahonoy Tun.	5.7d	7	Union
C. R. I. & P.				Buck Mt., Pa.-Gordon.....	14.9d	28	Union
Brinkley, Ark.-Little Rock.....	63.4s	59	Union	Locust Summit, Pa.-Excelsior.....	6.5d	8	Union
D. L. & W.				Schuylkill Haven, Pa.-Pottsville.....	4.5t	7	Union
Groveland, N. Y.-Leicester.....	9.6d	10	Union	Belt Line Jct., Pa.-Port Clinton...	16.9d	22	G. R. S.
Bath, N. Y.-Savona.....	7.4d	10	Union	Wernersville, Pa.-Richland.....	10.0d	9	G. R. S.
D. & R. G. W.				Swatara, Pa.-Rutherford.....	4.6t	18	G. R. S.
Salt Lake City, Utah-Ogden.....	33.7s	61	G. R. S.	Camp Hill, Pa.-Carlisle.....	18.4d	23	G. R. S.
E. J. & E.				Barnitz, Pa.-Lees Cross Roads.....	12.7d	16	G. R. S.
M. P. 14-M. P. 25.....	11.0d	11	G. R. S.	Reading, Pa.-Alburtis.....	20.6d	31	Union
M. P. 43-M. P. 45.....	2.0d	3	G. R. S.	S. A. L.			
G. N.				Sherman, Fla.-Miami.....	126.0s	154	Union
Keewatin, Minn.....	5.8s	6	G. R. S.	Savannah, Ga.-Mullins, S. C.....	207.0s	266	Union
Kelly Lake, Minn.....	0.6d	3	G. R. S.	S. P. & S.			
Swan River, Minn.-Gunn.....	11.9s	19	G. R. S.	Moody, Ore.-Redmond.....	135.0s	67	G. R. S.
G. M. & O.				Maryhill, Wash.-King.....	75.0s	44	G. R. S.
Murphysboro, Ill.....	3.0s	3	G. R. S.	Berrian, Wash.-Mottinger.....	5.0s	4	G. R. S.
K. C. S.				Southern			
Kansas City, Mo.-Oskaloosa.....	104.0s	98	G. R. S.	New Albany, Ind.-Milltown.....	26.0s	34	G. R. S.
L. E. & E.				Clarksville, Va.-Jeffress.....	1.9s	2	G. R. S.
Youngstown, Ohio.-Girard.....	2.5d	4	Union	Union			
L. V.				Brown Dump, Pa.-Mifflin Yd.....	0.4d	3	Union
Replacements.....		18	G. R. S.	U. P.			
L. & N.				Aspen, Wyo.-Altamont.....	5.0s	14	Union
M. P. 390.5-Ala.....	1.1d	1		W. M.			
Me. C.				Howardville, Md.-Walbrook.....	5.5d	6	Union
Wiscasset, Me.....	2.3s	2	G. R. S.	Walbrook, Md.-Tide.....	3.0s	7	Union
Mattawamkeag, Me.-Wypitlock..	18.2s	37	G. R. S.				
M.-K.-T.				Miles of road, single track.....	1,226.3s	1,974	
Ellis, Tex.-Hillsboro.....	17.5s	26	Union	double track.....	274.3d		
Waxahachie, Tex.-Hillsboro.....	30.1s	51	Union	three track.....	9.1t		
Granger, Tex.-Huff.....	20.8s	20	Union	four track.....	16.8f		
Mangum, Okla., and Carter.....	4.3s	4	Union				
Ney, Tex.....	1.3s	2	Union	Total road miles.....	1,526.5		
				Total track miles.....	1,869.4		

the I.C.C. order required a signal system. This was the case on the Western Pacific and several other roads. Numerous C.T.C. installations completed in 1949, however, were in territories where no trains operate more than 50 m.p.h. and, therefore, where the I.C.C. order did not apply. The installations were made to increase safety, save train time and reduce operating expenses, this being the case, for example, on the Clinchfield.

Several Retarder Projects

In 1949, car retarders were installed in six yards. These projects involved a total of 110 retarders—6,806 rail feet—and 245 power switch machines. These are increases compared with the 1948 projects, which included seven yards, a total of 100 retarders—6,387 rail feet—and 192 power switches. At Markham yard near Chicago, the Illinois Central is changing track layouts from ladders to groups, which will require the use of

only 12 new retarders—instead of 47 as previously in service—to serve 45 tracks, an increase of 2. Four switches are being added, making a total of 45. These switches are to be controlled by a new system in which all switches in a route from the hump to a classification track can be lined by pushing a button. This project, which is 90 per cent complete, is scheduled to go in service February 1. At Montreal, the Canadian Pacific is constructing a new yard which is being equipped with a retarder system in which the switches will be controlled by similar route buttons.

More and More Crossing Protection

Protection was installed at 1,571 crossings in 1949, and included 4,131 protection units. This represents an increase over the 1948 figures of 1,432 crossings and 2,866 units. An increasing trend to use more complete protection is shown by the installation of 945 power-

New Interlockings Placed in Service in 1949

Railroad and Location	Number of Home Signals	Number of Switch Machines	Manufacturer
A. T. & S. F.			
Argentine, Kan.....	6	6	Union
B. & O.			
Cinti Jct., Ohio.....	11	..	G. R. S.
Roachdale, Ind.....	4	1	G. R. S.
Seymour, Ind.....	4	..	G. R. S.
B. & M.			
East Deerfield, Mass.....	3	..	G. R. S.
C. P.			
Quebec, Que.....	14	2	G. R. S.
C. & O.			
Ches. Dist.			
Beatrice, Ind.....	10	2	Union
Toledo, Ohio.....	18	14	Union
Covington, Ky.....	54	36	Union
Columbus, Ohio.....	25	16	
P. M. Dist.			
Detroit, Mich.....	10	8	G. R. S.
C. & I. M.			
Havana, Ill.....	3	1	Union
C. & N. W.			
Sioux City, Iowa.....	5	3	G. R. S.
C. I. & L.			
Roachdale, Ind.....	5	1	G. R. S.
D. L. & W.			
Binghamton, N. Y.....	9	4	Union
D. M. & I. R.			
Allen Jct., Minn.....	10	5	G. R. S.
Erie			
Graham, N. Y.....	2	..	Union
Goshen, N. Y.....	7	5	Union
Silver Creek, Ohio.....	6	2	Union
G. N.			
Moorhead, Minn.....	3	1	G. R. S.
Fargo, Minn.....	9	9	G. R. S.
G. M. & O.			
Montgomery, Ala.....	8	6	G. R. S.
K. & I. T.			
Louisville, Ky.....	10	5	G. R. S.
L. V.			
Cementon, Pa.....	9	7	G. R. S.
L. I.			
Rockville Centre, N. Y.....	4	2	Union
Me. C.			
Mattawamkeag, Me.....	4	..	G. R. S.
M.-K.-T.			
Waxahachie, Tex.....	2	..	Union
M. P.			
McGehee, Ark.....	4	1	G. R. S.
N. C. & St. L.			
Howell, Ga.....	64	38	G. R. S.
N. Y. C.			
Brewster, N. Y.....	9	4	G. R. S.
Fostoria, N. Y.....	67	38	G. R. S.
East Berwick, Ohio.....	5	3	G. R. S.
West Berwick, Ohio.....	3	1	G. R. S.
East Carey, Ohio.....	5	3	G. R. S.
West Carey, Ohio.....	4	2	G. R. S.
East Wharton, Ohio.....	3	1	G. R. S.
West Wharton, Ohio.....	3	1	G. R. S.

Railroad and Location	Number of Home Signals	Number of Switch Machines	Manufacturer
East Forest, Ohio.....	3	1	G. R. S.
West Forest, Ohio.....	3	1	G. R. S.
East Grant, Ohio.....	3	1	G. R. S.
West Grant, Ohio.....	3	1	G. R. S.
East Hill, Ohio.....	3	1	G. R. S.
N. & W.			
"DO" Roanoke, Va.....	4	2	Union
"WB" Roanoke, Va.....	5	2	Union
Alnwick, W. Va.....	13	6	Union
White, W. Va.....	14	8	Union
N. P.			
Duluth, Minn.....	5	3	G. R. S.
Penna.			
Girard, Ohio.....	10	16	Union
R. F. & P.			
Milford, Va.....	13	13	Union
Sou.			
Atlanta, Ga.....	16	7	G. R. S.
Knoxville, Tenn.....	9	5	G. R. S.
Totals.....	532	331	

Automatic Interlockings Installed in 1949

Railroad	Location	Number of Signals	Manufacturer
A. T. & S. F.....	Independence, Kan.....	8	Union
C. & I. M.....	Havana, Ill.....	4	Union
C. M. St. P. & P.....	Bardwell, Wis.....	4	Union
C. G. W.....	Holcomb, Ill.....	4	Union
	Oneida, Iowa.....	6	Union
	Oelwein, Iowa.....	8	Union
	Lohrville, Iowa.....	6	Union
	Eagle Grove, Iowa.....	4	Union
	Clarksville, Iowa.....	4	Union
	Waterville, Iowa.....	4	Union
D. M. & I. R.....	Riley, Minn.....	4	Union
G. N.....	Helena, Mont.....	9	G. R. S.
I. T.....	Granite City, Ill.....	6	Union
L. V.....	Binghamton, N. Y.....	7	G. R. S.
L. & N.....	Birmingham, Ala.....	7	G. R. S.
M. St. P. & S. S. M.....	Duluth, Minn.....	6	G. R. S.
Penna.....	Chadds Ford, Pa.....	4	Union
St. L.-S. F.....	Girard, Kan.....	4	Union
S. A. L.....	Savannah, Ga.....	8	Union
	Savannah, Ga.....	5	Union
	Lake Wales, Fla.....	8	Union
S. P.—T. & N. O.....	Victoria, Tex.....	4	Union
	Bay City, Texas.....	4	Union
Wabash.....	Dillon, Ind.....	4	Union
Totals.....		132	

operated gates in 1949, which is an increase of 170 over the 775 installed in 1948. Of the installations at 1,571 crossings in 1949, about 938 were paid for by the railroads, 218 by public funds, and 417 jointly.

Of the 54 new interlockings placed in service in 1949, 24 are automatic, 5 are controlled by machines, including mechanical locking between levers, and 45 are the all-relay type controlled by panel-type machines with no mechanical locking, the interlocking being accomplished

by interconnections of circuits. Of the 45 all-relay plants, 43 are controlled by machines which include miniature levers or buttons to control switches and signals individually. Two large plants—at Fostoria, Ohio, on the New York Central, and at Howell, Ga., on the Nashville, Chattanooga & St. Louis—utilize the entrance-exit type of control in which a complete lineup is established by pushing only two buttons—one at the place on the track diagram corresponding to the point at which the

Car Retarder Projects Placed In Service During 1949

Railroad and Location	No. of Tracks	No. of Retarders	Rail Feet Retarders	No. of Switches	No. of Track Circuits	Signals	Skates	No. of Towers and Control Machines	Manufacturer
A. T. & S. F..... Argentine, Kan.....	56	12d	1,573	56	56	22	56	3	U. S. & S.
C. R. I. & P..... Armourdale, Kan....	40	17	1,148	44	44	14	..	3	U. S. & S.
..... Silvis, Ill.....	50	19	1,285	50	50	11	..	3	U. S. & S.
C. & O..... Russell, Ky.....	52	15d	1,510	54	52	11	52	6	U. S. & S.
Monongahela Connecting..... Pittsburgh, Pa.....	22	3	253	44*	35	6	..	1	G. R. S.
New York Central..... Ashtabula, Ohio....	1	1	88	..	..	..	..	1	G. R. S.
S. P..... Los Angeles, Cal....	40	8d	949	41	41	12	..	3	U. S. & S.
Totals.....		110	6,806	245	278	70	108	14	

Legend: * Switch machines previously in service not included in totals.

d Double retarders each of which is approximately twice as long as unit on which this table is based.

Centralized Traffic Control Placed in Service During 1949

Railroad	Location	Miles of Road	Number of Levers	Number of Power Switches	Number of Signals Controlled by Levers	Number of Intermediate Automatic Signals	Manufacturer
A. T. & S. F.....	Mulvane Kan.-East Jct.....	2.7s	..	..	..	2	Union
	Canyon, Tex.....	1.0s	21	14	18	2	Union
	Farwell, Tex.-Texico.....	2.8d	23	14	22	..	Union
	Wellington, Kan.-Brink, Okla.	0.8s	104	59	123	61	Union
A. C. L.....	Newell, Ga.-Folkston.....	3.2d	6	5	7	8	Union
	Rocky Mount, N. C.-Contentnea.....	82.3s	36	25	37	12	Union
B. & M.....	Middlesex, Mass. addition.....	8.6d	..	..	1	..	G. R. S.
	Johnsonville, N. Y.-Reillys.....	19.3d	8	2	12	10	Union
	Crescent, N. Y.-Scotia West.....	1.2s	..	..	..	..	Union
	Greenfield, Mass. addition.....	2.2d	4	..	..	..	Union
C. N.....	West Jct., Que.-St. Rosalie.....	7.0s	..	2	..	..	G. R. S.
C. P.....	Kirby, Me.-Mattawamkeag.....	116.5s	85	42	162	42	G. R. S.
C. & O.....	Natural Bridge, Va.-Buchanan.....	1.1s	2	..	4	..	..
Ches. Dist.....	Logan, W. Va.-Monitor Jct.....	17.1s	18	8	24	..	Union
P. M. Dist.....	Lake Odessa, Mich.	1.0s	19	9	17	..	Union
C. & N. W.....	Malta, Ill.-Nelson.....	..	..	1	..	..	G. R. S.
C. B. & Q.....	Balfour, Iowa-Council Bluffs.....	40.0d	31	30	92	45	G. R. S.
	Oxford, Neb.-Orleans.....	17.2s	29	10	28	15	Union
C. R. I. & P.....	Muscataine, Iowa-Eldon.....	8.7d	6	2	10	..	G. R. S.
Clinchfield.....	Erwin, Tenn.-Delano, Va.....	12.0s	36	18	72	48	Union
D. L. & W.....	Groveland, N. Y.....	122.0s	80	33	43	55	Union
	Bath, N. Y.....	..	4	2	4	..	Union
	Elmira, N. Y.....	..	5	2	6	..	Union
D. & R. G. W.....	Fox Jct., Colo.-Zuni.....	..	5	3	7	..	Union
Erie.....	Salamanca, N. Y.-Randolph.....	..	17	13	18	2	G. R. S.
	Typo, Ky.-Combs.....	3.3s	15	10	16	17	Union
L. & N.....	Hazard, Ky.-Coolidge.....	12.6d	7	..	10	2	G. R. S.
M. St. P. & S. S. M.....	Superior, Wis.....	4.0s	11	5	17	6	G. R. S.
M. P.....	Bushong, Kan.-Council Grove.....	14.0s	9	2	8	4	..
	Pleasant Hill, Mo.-Strasburg.....	3.2s	15	7	31	8	G. R. S.
N. Y. C. & St. L.....	St. Marys, Ohio-Frankfort, Ind.....	14.1s	6	3	12	2	G. R. S.
	Miller City, Ohio-Arcadia.....	5.3s	93	32	159	46	Union
N. & W.....	Radford, Va. addition.....	121.0s	36	4	22	20	Union
	Kenova, W. Va.-Rex, Ohio.....	31.0s	3	4	5	..	Union
	Tug, W. Va.-Farm.....	..	22	17	39	1	Union
P. & W. Va.....	Rook, Pa.-Pittsburgh Jct., Ohio.....	6.8d	11	8	19	..	Union
St. L.-S. F.....	Edward, Kan.-Afton, Okla.....	1.7d	32	1	46	17	Union
	Kahoga, Okla.-Racine, Mo.....	55.1s	53	13	37	28	Union
S. P.....	Aurant, Cal.-Alhambra.....	83.6s	20	8	12	11	Union
T. & P.....	McCall, La.-Donaldsonville.....	31.4s	9	11	19	1	Union
U. P.....	Los Angeles, Cal.-Riverside.....	2.6s	5	2	7	2	G. R. S.
Wab.....	Montpelier, Ohio-New Haven, Ind.....	4.3s	95	25	62	33	Union
	Stockton, Cal.-Oroville.....	49.7s	24	11	38	29	Union
W. P.....	Oroville Yd.-E. Oroville.....	1.0d	87	32	128	46	Union
W. & L. E.....	Bellevue, Ohio-Toledo.....	112.2s	5	1	8	..	Union
		2.0s	25	6	26	15	Union
Totals: Miles of road, single track.....		1,100.1s	1,222	496	1,428	590	
Miles of road, double track.....		108.3					

train is to enter the interlocking and the second at the exit.

Another table lists 70 interlockings at which major reconstruction programs were completed in 1949, the figures in this table representing the new signals and

switch machines installed as replacements or additions. In some instances, new modern interlocking control machines and entirely new circuits were stalled so that, insofar as materials required and final results are concerned, these are practically new plants.

Highway-Railroad Crossing Protection Installed In 1949

Railroad	No. of Cross'gs Protected by new Installations	No. of Flashing-light Signals	No. of Electrically Operated Gates	Source of Funds Figures Show Number of Crossings Protected			Railroad	No. of Cross'gs Protected by new Installations	No. of Flashing-light Signals	No. of Electrically Operated Gates	Source of Funds Figures Show Number of Crossings Protected		
				Railroad	Public Funds of Any Source	Joint Railroad and Public Funds					Railroad	Public Funds of Any Source	Joint Railroad and Public Funds
A. T. & S. F.	110	214	36	66	30	14	M. P.	51	102	24	32	6	13
A. & W. P.							G. C. L.	27	57	..	15	11	1
Ga.	2	4	..	2	..	..	I. G. N.	25	50	..	18	7	..
W. of Ala.	2	4	..	1	1	..	N. C. & St. L.	8	17	2	7	1	..
A. C. L.	14	31	12	1	..	13	N. Y. C.	47	94	57	36	1	10
A. & S.	1	2	..	1	..	..	C. C. C. & St. L.	27	48	23	16	..	11
B. & O.	60	129	39	35	2	23	M. C.	31	58	51	12	5	14
B. & Ar.	1	2	..	..	..	..	N. Y. C. & St. L.	12	16	8	9	2	3
B. & M.	44	137	50	37	2	5	N. Y. N. H. & H.	38	96	24	38	..	..
C. N.	46	96	6	..	..	46	N. & W.	15	32	26	14	..	1
G. T. W.	14	23	6	9	4	1	N. P.	37	74	6	21	15	1
C. P.	19	22	5	3	1	15	N. S.	3	12	..	..	..	3
C. of Ga.	5	11	..	2	3	..	P. E.	17	35	..	3	11	3
C. of N. J.	10	38	4	10	..	..	Penna.	61	149	82	40	2	19
N. Y. & L. B.	7	38	14	7	..	..	P.-R. S. L.	14	35	36	14	..	..
C. V.	2	4	..	1	1	..	P. & W. Va.	2	4	..	2	..	..
C. & W. C.	1	2	..	..	1	..	P. T.	1	11	4	1	..	..
C. & O.	15	47	..	13	1	1	Reading	11	26	24	11	..	..
P. M. Dist.	28	63	7	4	8	16	R. F. & P.	1	2	..	..	..	1
C. & E. I.	10	18	6	5	..	5	St. L.-S. F.	20	36	4	6	2	12
C. S. S. & S. B.	4	8	3	4	..	..	St. L. S. W.	4	2	..	1	..	3
C. & I. M.	3	6	6	3	..	..	S. A. L.	24	17	7	4	9	11
C. & N. W.	37	78	21	20	..	18	Sou.	53	116	12	34	15	4
C. & W. I.	2	..	2	1	..	1	A. G. S.	1	2	..	1	..	..
C. B. & Q.	53	36	76	42	3	8	C. N. O. & T. P.	1	2	-2	..	..	1
C. G. W.	14	28	8	11	2	2	N. O. & N. E.	1	2	..	1	..	..
C. M. St. P. & P.	22	60	10	7	14	1	S. P.	31	56	6	..	12	19
C. I. & L.	12	28	9	12	..	..	T. & N. O.	26	50	2	9	12	5
C. R. I. & P.	29	24	34	21	4	4	S. P. & S.	1	2	..	1	..	..
C. & S.	1	2	..	..	1	..	T. C.	2	2*	..	2	..	..
D. & H.	10	24	12	10	..	..	T. R. R. A. St. L.	1	2	2	1	..	..
D. L. & W.	15	68	10	15	..	..	T. P.	17	34	6	7	1	9
D. & R. G. W.	6	12	2	1	..	5	T. H. & B.	2	5	2	1	..	1
D. M. & I. R.	10	22	..	10	..	..	U. P.	49	98	20	19	3	27
E. J. & E.	5	11	14	5	..	..	Virg.	7	16	4	7	..	..
Erie	29	55	31	28	..	1	Wabash	10	20	6	1	7	2
F. E. C.	9	18	10	9	..	..	W. M.	8	19	..	3	..	5
G. N.	30	60†	..	23	1	6	W. P.	38	65	5††	18	6	14
G. B. & W.	3	3	..	..	..	3			1*	..	..	..	..
G. M. & O.	22	24	20	15	2	5			4	2	2	..	..
I. C.	52	102	13	38	2	12			2	2	..	..	..
I. T.	2	4	..	2	..	..			..	..	..	..	..
K. C. S.	20	40	..	12	..	8			..	..	..	..	..
L. & N. E.	1	2	..	1/2	1/2	..			..	..	..	..	..
L. V.	9	6	24	9	..	..			..	..	..	..	..
L. I.	7	28	..	7	..	..			..	..	..	..	..
L. & N.	12	11	1	10	..	2			..	..	..	..	..
Me. C.	6	14	2	5	..	1			..	..	..	..	..
M. & St. L.	2	2	..	..	..	2			..	..	..	..	..
M. St. P. & S. S. M.	10	12	..	8	2	..			..	..	..	..	..
D. S. S. & A.	4	8	..	..	2	2			..	..	..	..	..
M.-K.-T.	13	26	4	6	3	4			..	..	..	..	..
Totals	1,571	3,113	945	938 1/2	218 1/2	417			3,187				

LEGEND: † Flashing-light signals with rotating-stop disk
†† Wig-wag
* Stop-and-go red and green light

Comparison of Annual Signal Construction

	1949	1948	1947	1946	1945	1944	1943	1942	1941	1940	1939
Automatic Block Signals.....	1,974	1,711	2,269	3,078	2,350	1,539	1,690	1,421	1,407	1,017	879
Cab Signaling.....	270	514	..	..	..	..	..	..	..	..	..
Interlockings.....	..	..	..	..	..	..	..	..	..	..	..
Signals and switches.....	863	1,074	857	1,529	9,910	851	1,498	785	518	1,024	396
At new plants.....	864	665	408	993	940	687	760	554	693	734	545
At rebuilt plants.....	132	80	83	132	88	62	55	78	80	125	96
At automatic plants.....	..	..	..	..	..	..	..	..	..	..	..
Spring Switches.....	242	264	356	554	764	382	448	284	275	294	222
Mechanical facing-point locks.....	73	107	107	248	341	115	88	126	159	97	104
Signals at spring switches.....	455	516	491	707	991	553	498	384	354	336	228
Centralized Traffic Control.....	496	565	538	453	633	596	463	263	190	121	38
Power switch machines.....	1,428	1,725	1,810	1,385	2,217	2,141	1,775	1,030	675	375	122
Semi-automatic signals.....	590	738	853	..	..	..	..	..	..	..	..
Intermediate signals in C.T.C. territory.....	..	..	..	..	..	..	..	..	..	..	..
Classification Yards.....	110	100	23	18	14	25	..	51	..	11	2
Car retarders.....	245	192	27	73	57	52	..	108	..	19	3
Power switch machines.....	..	..	..	..	..	..	..	..	..	..	..
Highway Crossing Protection.....	4,132	3,261	2,852	2,214	1,089	643	477	1,297	2,615	3,006	2,385
Protective units.....	..	..	..	..	..	..	..	..	..	..	..
Totals.....	11,874	11,872	10,674	11,384	10,394	7,646	7,752	6,381	6,966	7,159	5,020

Spring Swtiches Installed in 1949

Railroad	Number of Spring Switches Installed	Number Equipped with Facing-Point Lock	Signals Installed as Protection	Railroad	Number of Spring Switches Installed	Number Equipped with Facing-Point Lock	Signals Installed as Protection
A. T. & S. F.	54s	..	120	M.-K.-T.	13s	..	12
A. & S.	1j	..	10	M. P.	1y	1	3
B. & O.	2s	1	9	I.-G. N.	1s	1	3
B. & A.	1d	1	4	N. Y. C. & St. L.	3s	3	3
B. & A.	1d	1	3	N. Y. O. & W.	2s	..	2
B. & M.	4d	..	12	N. & W.	1d	..	3
C. N.	8s	..	6	N. P.	1y	5	15
G. T. W.	5y	..	2	P. E.	1y	..	5
C. P.	1y	..	2	Penna.	1s	4	4
C. of Ga.	5s	5	10	P. & W. Va.	13s	13	26
C. & E. I.	1y	..	..	Reading.	2s	2	2
C. & N. W.	1s	..	2	St. L.-S. F.	2j	..	3
C. B. & Q.	4s	4	4	S. A. L.	3s	3	13
C. G. W.	2d	2	8	Sou.	6d	..	12
C. I. & L.	4s	..	3	S. P.	2s	6	..
C. S. S. & S. B.	2y	..	8	T. & N. O.	2y	1	24
Clinchfield.	1y	..	9	T. & P.	1s	..	14
D. L. & W.	2s	1	3	U. P.	8s	..	3
D. & R. G. W.	3y	1	8	W. P.	7s	1	..
D. M. & I. R.	1d	2	2	Totals	190 sidings	73	455
Erie.	4d	4	3		24 yard		
G. N.	1j	8	28		5 junction		
G. B. & W.	8s	..	3		23 end double track		
G. M. & O.	1s	1	3		242		
I. C.	2y	..	19				
L. & N.	13s	..	22				
M. St. P. & S. S. M.	12s	..	3				
D. S. S. & A.	1s	1	2				
	1y	..	2				

Interlockings Rebuilt in 1949

Railroad and Location	Number of Home Signals	Number of Switches, Machines or Pipe Connected Switches	Manufacturer	Railroad and Location	Number of Home Signals	Number of Switches, Machines or Pipe Connected Switches	Manufacturer
A. T. & S. F.	4	4	Union	E. J. & E.	8	9	G. R. S.
Romeo, Ill.	3	1	Union	W. Chicago, Ill.	..	..	G. R. S.
Joliet, Ill.	2	..	Union	G. N.	4	8	G. R. S.
Henrietta, Mo.	19	12	G. R. S.	Allouez, Wis.	8	..	G. R. S.
Argentine, Kan.	30	25	Union	Bloom Island, Minn.	6	10	Union
Turner, Kan.	10	2	Union	Jamaica, N. Y.	14	1	G. R. S.
Edgerton, Kan.	11	15	Union	L. & N.	1	..	G. R. S.
Ellinor, Kan.	3	1	Union	Hazard, Ky.	1	..	G. R. S.
Strong City, Kan.	7	2	Union	Me. C.	2	..	G. R. S.
Chanute, Kan.	7	5	G. R. S.	No. Maine Jct., Me.	6	1	G. R. S.
Cross-White Eagle, Okla.	..	..	..	Wiscasset, Me.	6	..	G. R. S.
Los Angeles, Cal.	..	..	..	M. St. P. & S. S. M.	6	2	G. R. S.
B. & O.	2	4	G. R. S.	Superior, Wis.	6	..	G. R. S.
Martinsburg, W. Va.	2	7	G. R. S.	Superior, Wis.	6	2	G. R. S.
Cochran, Ind.	3	28	G. R. S.	McGregor, Minn.	4	..	G. R. S.
Chicago, Ill.	11	16	G. R. S.	Detroit Lakes, Minn.	4	..	G. R. S.
Baltimore, Md.	2	7	..	Erskine, Minn.	..	..	..
Brunswick, Md.	6	23	G. R. S.	N. Y. C.	62	..	G. R. S.
McCook, Ill.	4	7	G. R. S.	M. C.	5	..	G. R. S.
Hobbs, W. Va.	4	4	G. R. S.	Detroit, Mich.	..	..	G. R. S.
Bond Hill, Ohio	4	3	G. R. S.	Michigan City, Ind.	4	2	G. R. S.
Sand Patch, Pa.	8	16	..	C. C. C. & St. L.	10	14	G. R. S.
Halethorpe, Md.	7	13	..	Hill Siding, Ohio	..	..	..
Fostoria, Ohio	2	2	G. R. S.	Indianapolis, Ind.	..	1	Union
B. & M.	..	1	G. R. S.	N. & W.	15	1	Union
Lowell, Mass.	16	..	Union	Norfolk, Va.	6	4	Union
C. N.	6	..	Union	Bluefield, Va.	6	1	Union
Hamilton, Ont.	..	..	..	Ironton, Ohio	24	8	..
Sig. added at 10 plants.	..	..	..	Welch, W. Va.	6	2	G. R. S.
G. T. W.	7	1	Union	P. E.	15	17	Union
Stillwell, Ind.	7	1	Union	El Monte, Cal.	7	9	Union
C. & O.	1	1	G. R. S.	Penna.	5	3	Union
Ches. Dist.	..	..	..	Philadelphia, Pa.	..	6	Union
Allegheny, Va.	7	1	Union	Canton, Ohio	15	9	Union
White Sulphur Springs, W. Va.	7	1	Union	Big Run, Ohio	7	3	Union
Guyandotte, W. Va.	1	3	Union	Girard, Ohio	..	2	Union
Huntington, W. Va.	1	1	Union	Ft. Wayne, Ind.	..	..	..
Ashland, Ky.	2	3	Union	Forest, Ohio	..	..	..
Ashland, Ky.	1	1	..	P. & L. E.	1	3	Union
P. M. Dist.	..	..	..	New Castle Jct., Pa.	5	32	G. R. S.
Detroit, Mich.	1	1	G. R. S.	Neville, Pa.	6	6	G. R. S.
C. & W. I.	..	5	Union	Reading	4	..	Union
Chicago, Ill.	..	22	Union	Cheltenham, Pa.	7	..	Union
Chicago, Ill.	8	4	G. R. S.	Sheridan, Pa.	..	..	..
C. B. & Q.	6	2	Union	Tamaqua, Pa.	..	..	..
D. L. & W.	4	1	G. R. S.	Totals	459	405	
Groveland, N. Y.	8	3	Union				
D. & R. G. W.	..	10	..				
Salt Lake City, Utah	..	..	..	
Erie	..	..	..	
Cleveland, Ohio	..	..	..	



Facilities for repairing and servicing Diesel-electric locomotives continued one of the major categories of capital improvements made during 1949

CONSTRUCTION Volume Continues High

Year's adverse factors, creating greater need for the economies resulting from improvement work, stimulated expenditures

By HENRY E. MICHAEL
Associate Editor

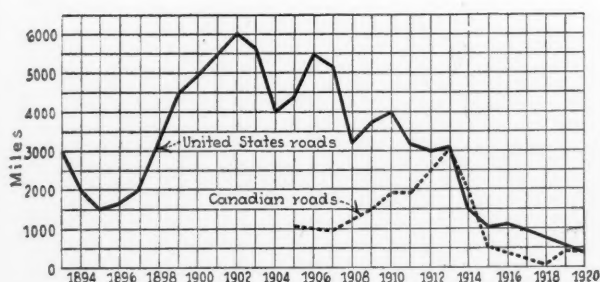
Although construction activity in 1949 did not maintain the high tempo of 1948, its volume was, nevertheless, higher than in any other year since 1930. The reason for this high volume, despite such important deterring influences as a traffic drop and the inauguration of the five-day work week, was the continuing demand for improved service, greater efficiency and increased economy. Moreover, many railroads had embarked on sizable improvement programs during 1948, many of the projects of which carried over into 1949, so there could be no turning back, and the only logical and economical course was to proceed to completion to achieve the benefits inherent in these projects.

MILES OF MAIN TRACK BUILT IN THE UNITED STATES IN 1949

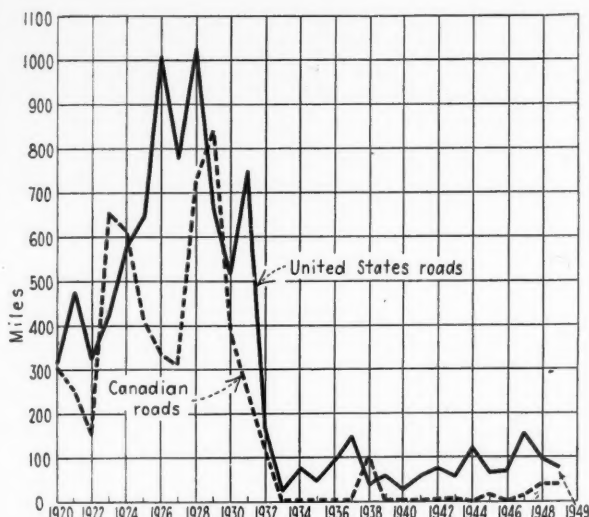
States	No. of companies building	First track	Second track	Third track	Fourth track	Total
California.....	1	....	4.86	....	....	4.86
Illinois.....	2	8.81	....	....	....	8.81
Kansas.....	1	2.52	....	....	....	2.52
Kentucky.....	2	21.40	3.50	....	....	24.90
Louisiana.....	1	15.30	....	....	....	15.30
Missouri.....	1	6.54	....	....	....	6.54
Nebraska.....	1	9.80	....	....	....	9.80
North Carolina.....	1	0.52	....	....	....	0.52
Oklahoma.....	1	7.17	....	....	....	7.17
Pennsylvania.....	1	....	....	0.20	....	0.20
West Virginia.....	1	6.11	....	....	....	6.11
Wyoming.....	1	....	1.75	....	....	1.75
Total.....	—	78.17	10.11	0.20	....	88.48

That there was relatively little curtailment is shown by a comparison of actual expenditures with estimates of expenditures made earlier in the year. In March, reports from engineering officers to *Railway Age* indicated that gross expenditures for additions and betterments to the fixed properties would reach an estimated total of \$330,000,000 in 1949, whereas, on the basis of actual expenditures for the first three quarters and estimates for the rest of the year, the total will probably be about \$320,000,000, or only 3 per cent less than the expenditures predicted. Further evidence of this nature is contained in year-end reports to *Railway Age* from practically all the railways of the country, which show that, exclusive of grade crossing eliminations, projects costing \$100,000 or more were carried forward during 1949, with aggregate authorized expenditures in excess of \$343,000,000. Of this total, more than \$133,000,000 represents projects that were completed during the year, but not necessarily begun after January 1.

A large percentage of the 1949 improvement work was designed to secure full advantage of the increased capacity of the new equipment, such as Diesel locomotives, that has been bought in such large quantities in recent years—especially to effect economies in operation. This concentration on work intended to improve



Mileage of new lines constructed in the United States and Canada, 1893 to 1920



Mileage of new lines constructed in the United States and Canada, 1920 to 1949

operating efficiency, and thereby effect economies, is demonstrated in the fact that the largest single category of capital improvements in progress during 1949 consisted of revisions of grade and alinement. These projects either removed speed restrictions, permitted trains to be hauled with larger tonnages—perhaps reducing the need for double-heading or pusher service—or shortened lines. In some cases they accomplished all three ends. This class of construction work returned to the first-place ranking it held in 1947, after having dropped to third place in 1948. This is attributed largely to the fact that, although fewer projects were under way during the year, those that were in progress were larger, and cost more money—at least \$13,000,000 more.

While projects involving revisions of grade and alinement climbed to first place in 1949 expenditures, yard and terminal improvements dropped from first place in 1948 to second this past year. This drop in rank can be attributed largely to the fact that many of the smaller yard improvements in 1948—costing less than \$1,000,000—were completed in that year, and fewer such projects were carried over into or were started in 1949. On the other hand, whereas there were only 12 projects costing more than \$1,000,000 in progress during 1948, 14 such projects were under way in 1949. Half of them were completed.

One of the accompanying tables gives a comprehensive analysis of each of the 13 major categories of construc-

tion work in progress during the year. For example, it shows that bridge work comprised the third largest class of construction work under way in 1949—with 66 projects costing \$36,249,906. Half (33) of these were completed at a cost of \$6,413,259. In addition to these projects for which costs were given in reports to *Railway Age*, 25 other bridge projects, costs of which were not given, are also shown as reported under way. Seventeen of these were completed.

Besides giving totals for each major category of construction work in progress during 1949, this table sums up the whole 1949 construction picture by showing that there were 444 projects under way during the year, the total cost of which, when completed, will amount to \$343,995,890. In addition to these projects for which cost figures were given, the table shows that the railways reported 168 other projects in progress, of which 95 were completed.

Highway Grade Separations

Grade crossing eliminations in 1949 continued at about the same pace as in the year before. Work was in progress during the year on the elimination of 241 grade crossings and the reconstruction of 60 existing grade-separation structures. A total of 85 new structures were completed. In making their reports to *Rail-*

CLASSIFICATION OF CONSTRUCTION WORK IN 1949, INCLUDING ONLY PROJECTS COSTING MORE THAN \$100,000

Construction Category	Projects		Cost
	Number In Progress	Number Completed	
Revisions, Grade & Alinement.....	38	25	\$48,919,020
	12*	7*	20,289,825
Yards & Terminals.....	51	27	45,786,393
	21*	8*	23,486,588
Bridge Work.....	66	33	36,249,906
	25*	17*	6,413,259
Signaling, C.T.C., etc.....	41	25	26,782,320
	16*	8*	13,105,153
Buildings**			
Passenger Stations.....	13	5	7,609,007
	8*	3*	2,165,000
Freight Houses.....	11	5	4,444,320
	10*	3*	1,633,320
Car Shops.....	6	4	904,488
	10*	5*	438,300
Other Buildings.....	31	16	14,148,973
	6*	2*	6,107,313
Total Buildings.....	61	30	25,106,788
	34*	13*	10,343,933
Locomotive Servicing Facilities			
Diesel.....	42	25	15,756,269
	31*	24*	6,962,437
Steam.....	34	12	11,567,355
	10*	8*	2,886,885
Industrial Tracks.....	23	17	7,212,068
	4*	3*	5,538,736
Tunnels.....	8	6	1,287,251
(excluding work shown in other categories)	1*	1*	910,650
Miscellaneous Construction.....	80	52	64,640,015
	14*	6*	44,037,770
Other Work Not Classified.....			60,688,505
All Projects Reported.....	444	252	343,995,890
	168*	95*	133,955,236

*Additional Projects for which costs were not given.

**Not included in other categories.

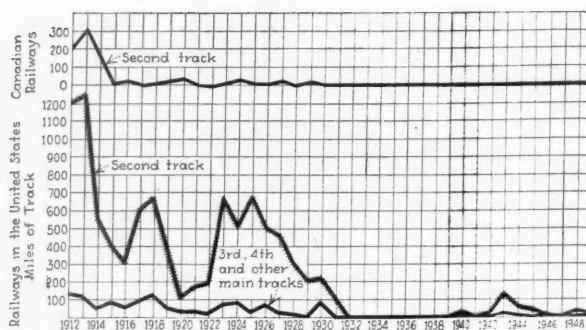
MILES OF NEW LINES COMPLETED IN THE UNITED STATES SINCE 1830

Year	Miles	Year	Miles
1830.....	40	1890.....	5,739
1831.....	99	1891.....	4,620
1832.....	191	1892.....	4,648
1833.....	116	1893.....	3,024
1834.....	214	1894.....	1,760
1835.....	138	1895.....	1,420
1836.....	280	1896.....	1,692
1837.....	348	1897.....	2,109
1838.....	453	1898.....	3,265
1839.....	386	1899.....	4,569
1840.....	491	1900.....	4,894
1841.....	606	1901.....	5,368
1842.....	505	1902.....	6,026
1843.....	288	1903.....	5,652
1844.....	180	1904.....	3,832
1845.....	277	1905.....	4,388
1846.....	333	1906.....	5,623
1847.....	263	1907.....	5,212
1848.....	1,056	1908.....	3,214
1849.....	1,048	1909.....	3,748
1850.....	1,261	1910.....	4,122
1851.....	1,274	1911.....	3,066
1852.....	2,288	1912.....	2,997
1853.....	2,170	1913.....	3,071
1854.....	3,442	1914.....	1,532
1855.....	2,453	1915.....	933
1856.....	1,471	1916.....	1,098
1857.....	2,077	1917.....	979
1858.....	1,966	1918.....	721
1859.....	1,707	1919.....	686
1860.....	1,500	1920.....	314
1861.....	1,016	1921.....	475
1862.....	720	1922.....	324
1863.....	574	1923.....	427
1864.....	947	1924.....	579
1865.....	819	1925.....	644
1866.....	1,404	1926.....	1,005
1867.....	2,541	1927.....	779
1868.....	2,468	1928.....	1,025
1869.....	4,103	1929.....	666
1870.....	5,658	1930.....	513
1871.....	6,660	1931.....	748
1872.....	7,439	1932.....	163
1873.....	5,217	1933.....	24
1874.....	2,584	1934.....	76
1875.....	1,606	1935.....	45
1876.....	2,575	1936.....	93
1877.....	2,280	1937.....	148
1878.....	2,428	1938.....	38
1879.....	5,006	1939.....	58
1880.....	6,876	1940.....	26
1881.....	9,789	1941.....	54
1882.....	11,599	1942.....	74
1883.....	6,819	1943.....	56
1884.....	3,974	1944.....	121
1885.....	3,131	1945.....	65
1886.....	8,400	1946.....	68
1887.....	13,081	1947.....	154
1888.....	7,066	1948.....	96
1889.....	5,707	1949.....	78

MILES OF NEW LINES COMPLETED IN CANADA SINCE 1904

Year	Miles	Year	Miles
1904.....	316	1927.....	310
1905.....	1,181	1928.....	723
1906.....	1,007	1929.....	841
1907.....	976	1930.....	385
1908.....	1,249	1931.....	250
1909.....	1,488	1932.....	121
1910.....	1,844	1933.....	0
1911.....	1,898	1934.....	1
1912.....	2,232	1935.....	2
1913.....	3,013	1936.....	1
1914.....	1,978	1937.....	0
1915.....	718	1938.....	101
1916.....	290	1939.....	1
1917.....	270	1940.....	2
1918.....	135	1941.....	1
1919.....	433	1942.....	1
1920.....	305	1943.....	3
1921.....	252	1944.....	0
1922.....	145	1945.....	15
1923.....	655	1946.....	0
1924.....	615	1947.....	13
1925.....	414	1948.....	40
1926.....	335	1949.....	39

way Age, the railways gave cost information on 163 of the 241 grade separations in progress. On these 163 projects the railways will spend \$6,057,311, while other agencies will spend \$59,317,641, with \$17,284,340 being spent on five other projects for which the distribution of cost is unavailable. There were 77 grade crossing



Mileage of multiple tracks constructed

projects under way during the year without cost to the railways, while 14 structures were under construction at their sole expense.

The amount of new track constructed in 1949 decreased for the third successive year—to only 78 mi. As has been the case for several years, no large lines were built, the longest being 21 mi. Besides the first track built, 10 mi. of second track were constructed, and 0.20 mi. of third track was completed. In Canada a total of 39 mi. of new lines was built, which compares with 40 mi. in 1948 and 13 mi. in 1947. In Mexico a total of 21 mi. of new lines was constructed. No multiple-track work was completed in either Canada or Mexico.

Following is a detailed report by roads of all grade crossing work undertaken during 1949, as well as of all other construction projects, completed during the year, or still in progress at its close, the individual cost of which approached or exceeded \$100,000:

Railway Construction in the United States

(Figures in parentheses indicate percentage of completion at the end of 1949)

Akron Union Passenger Depot

Important Work Undertaken: Construction of new passenger station, including tracks, shelters and platforms, Akron, Ohio, \$2,308,300 (95).

Alaska

Important Work Undertaken: Construction of a terminal yard, Fairbanks, \$1,000,000 (98); other terminal yard facilities, Fairbanks, \$3,200,000 (98); widening of banks and raising track at various locations, \$5,188,000 (100); construction of six steel bridges, Healy Canyon, \$520,000 (99); a heavy equipment and Diesel repair shop, Anchorage, \$1,000,000 (100); a locomotive coaling and water servicing station, Fairbanks, \$310,000 (95); a power plant, Fairbanks, \$820,000 (95); a Diesel generating plant, Fairbanks, \$310,000 (25); revision of grade and alignment on railway and highway, Turnagain Arm, \$5,500,000 (20).

Atchison, Topeka & Santa Fe

Grade Crossing Eliminations: Overcrossings: Fifth st., Atchison, Kan., joint with Missouri Pacific and city (100); U. S. Highway 66, Riordan, Ariz. (100); U. S. Highway 66, Sunshine, Ariz. (100); Cheto, Ariz. (100); U. S. 66, Manuelito, N. M. (20); Subways: Glencoe, Okla. (20); East Macera, Cal. (100); pedestrian subway, Raton, N. M. (100).

Important Work Undertaken: Renewal of bridge, Henrietta, Mo. (100); construction of hump yard, Argentine, Kan. (100); revision of alignment, Ethel, Mo. (100); revision of alignment, Turner, Kan. (100); revision of alignment, Holliday, Kan. (100); revision of alignment, Mulhall, Okla. (100); alteration to signal system, Craig, Kan. (100); construction of icing facilities, Argentine, Kan. (100); construction of transfer platform, Argentine, Kan., (100); construction of a Diesel servicing building, Corwith, Ill. (100); construction of Diesel servicing facilities, Argentine, Kan. (100); coach and welding shop, Topeka, Kan. (100); renewal of bridge, including a reduction of curves, Waynoka, Okla. (100); construction of a hump yard, Pueblo, Colo., (30); installation of C.T.C., including track changes, Wellington, Kan., to Oklahoma-Kansas line (100); installation of C.T.C., including track changes, state line to Waynoka, Okla. (75); installation of C.T.C. in yard, including track changes, Waynoka, Okla. (100); construction of a combination depot, Woodward, Okla. (100); electrification of ice plant, La Junta, Colo. (100); renewal of bridge, Cucamonga, Cal. (100); revision of alignment, Carlsbad, Cal. (100); installation of portable radio equipment on Diesels and cabooses, Albuquerque and Los Angeles divisions (100); construction of two Diesel service pits, Barstow, Cal. (100); expansion of armature shop, San Bernardino, Cal. (100); installation of mechanical car-washing facilities, Los Angeles, Cal. (100); construction of tank-car cleaning facilities,

Hobart, Cal. (100); construction of Diesel repair facilities, San Bernardino, Cal. (100).

(Gulf, Colorado & Santa Fe) *Grade Crossing Eliminations*: Overcrossings: Gainesville, Tex. (100). Subways: Clarendon drive, Dallas, Tex. (100); Central boulevard, Dallas (40).

Important Work Undertaken: Revision of alignment, Marietta, Okla. (100); installation of automatic signals, including track changes, Temple, Tex., to Brownwood (60).

(Panhandle & Santa Fe) *Important Work Undertaken*: Installation of C.T.C., including track changes, Canyon, Tex., to Texico, N. M. (100).

Atlanta & Saint Andrews Bay

Important Work Undertaken: Construction of a new classification yard, including shop tracks and a new Diesel-locomotive shop, Panama City, Fla., \$500,000 (100).

Atlantic & Yadkin

Important Work Undertaken: Reconstruction of four bridges, \$113,000 (100).

Atlantic Coast Line

New Road Under Construction: Near Clewiston Fla., to Okeelanta, 16 mi.

Grade Crossing Eliminations: Overcrossings: Pembroke, N. C. (100); Goldsboro, N. C. (100); Woodbury, Ga. (100); Folkston, Ga. (100); Owensboro, Fla. (100). All work accomplished by use of public funds.

Important Work Undertaken: Changing a passing track from center to outside, Contentnea, N. C., \$133,200 (100); changing center passing track to two outside tracks, Selma, N. C., \$112,980 (100); construction of additional track facilities, Atlanta, Ga., \$170,000 (100); reconstruction of bridge over North East Cape Fear river, Castle Hayne, N. C. \$120,150 (35); construction of a new line near Clewiston, Fla. to Okeelanta, \$750,000 (65).

Baltimore & Ohio

Grade Crossing Eliminations: Overcrossings: Elsmere Junction, Del., cost borne by the railway \$27,000 (85).

Important Work Undertaken: Construction of a union passenger depot, joint with the Pennsylvania, Akron, Ohio (100); alterations to buildings, Baltimore, Md. (100); construction of additional freight facilities, Forrest Hill, Chicago (100); improvement of Mill Creek yard, Cincinnati, Ohio (100); construction of Needmore yard, Dayton, Ohio (50); track changes, Gravel Bank, Ohio (100); improvements to Pier No. 9, Locust Point, Md. (100); installation of car shakeouts, Locust Point (100); construction of a flood wall, Parkersburg, W. Va. (100); construction of meat handling facilities, Philadelphia, Pa. (100); reconstruction of enginehouse walls, Philadelphia (100); installation of flood protection facilities, Portsmouth, Ohio (100); relocation of facilities at Municipal Ferry terminal, Staten Island, N. Y. (75); improvements to joint coach and engine terminal, Washington, D. C. (100); construction of Diesel servicing facilities at eight locations on the system (100); construction of office, locker and toilet facilities at five locations (100); improvements to 22 bridges (100); improvement of a bridge (75). Total estimated cost of these projects \$11,000,000.

Beaufort & Morehead

Important Work Undertaken: Construction of a new drawbridge between Beaufort, N. C., and Morehead City, including an increase in length of span from 60 to 80 ft., \$415,000 (80).

Belt Railway of Chicago

Important Work Undertaken: Lengthening of 16 tracks in the east receiving yard, including the installation of additional crossovers and signals for hump switching, Clearing yard, Clearing, Ill., \$180,000 (100); lengthening of 15 tracks in the west receiving yard, including the installation of additional signaling at hump and entrance to yard, Clearing, Ill., \$274,000 (95); construction of Diesel repair and servicing facilities, including the installation of fuel and sand storage tanks and other pertinent facilities, Clearing, Ill., \$345,000 (80).

Bessemer & Lake Erie

Grade Crossing Eliminations: Harmonsburg, Pa., with federal funds, at no cost to railway and \$137,200 cost to others (100).

Important Work Undertaken: Installation of a fire protection system, including 7,000 lin. ft. of high-pressure water mains, connected with 21 fire hydrants, supplied by a 100,000-gal. elevated water tank, a 1,000-g.p.m. supply pump and including a 1,000-g.p.m. fire pump, Greenville, Pa., \$112,000 (85).

Birmingham Southern

Important Work Undertaken: Construction of car-repair shop, Ensley, Ala., \$115,000 (100).

Boston & Maine

Grade Crossing Eliminations: Overcrossings: Bridge st., Salem, Mass., with federal aid, at no expense to the railway, \$1,300,000 (25); Ferry st., Concord, N. H., with federal aid and incidental work done by railway which bore \$48,300 of the cost, while \$600,000 was paid by others (100).

Important Work Undertaken: Alteration to power plant, including the installation of two new boilers with stokers and the construction of a new chimney, Mechanicville, N. Y., \$161,000 (100); alteration of power plant, including the installation of new boilers and the construction of a chimney, car-having shed, boiler house extension and new steam line, Concord, N. H., \$185,000 (100); installation of an electric interlocking, C.T.C. and automatic signaling, including track changes, Johnsonville, N. Y., to Troy, \$247,000 (100); installation of a new steel superstructure on bridge, North Conway, N. H., \$120,000 (100); installation of a 1,000,000-gal. Diesel fuel tank, including piping and concrete dike, Charlestown, Mass., \$125,000 (100); construction of a culvert and the installation of riprap, Wilder, Vt., to Wells River, \$1,300,000 (90).

Canadian National

(Grand Trunk Western) *Grade Crossing Eliminations*: Overcrossings: U. S. Highway 12, Jackson, Mich., overhead bridge spanning branch main track of G.T.W., and main track and a side track of the New York Cen-

tral and the Grand river, work done by state without cost to the railway and \$625,000 to others, exclusive of approaches and pavement (85). Subways: John C. Lodge expressway, Detroit, Mich., a two-span, plate-girder bridge with reinforced-concrete floor and ballasted track, \$350,000, exclusive of street work, paid for with federal and state funds (100).

Important Work Undertaken: Replacement of a two-track car-ferry apron, including the renewal of pile and timber foundations of counterweight towers, the renewal of portions of timber racks and pile clusters, and the installation of 90 ft. of steel sheet pile wall at the car-ferry dock, Detroit, Mich., \$200,000 (15); construction of a passenger station at a new location, Royal Oak, Mich., \$100,000 (15); construction of four concrete-pile and slab ballasted deck bridges, replacing double-track treated-timber trestles at various locations, \$135,000 (100).

Canton

Important Work Undertaken: Diesel enginehouse, including concrete pits, cranes and an incidental building, Canton, Baltimore, Md., \$130,000 (100).

Central of Georgia

Grade Crossing Eliminations: Overcrossings: Near Senoia, Ga., with federal funds at no cost to the railway, \$60,000 (75); near Milner, Ga., with federal funds at no cost to railway, \$130,000 (35).

Charleston & Western Carolina

Important Work Undertaken: Relocation of freight station and loading tracks, Greenwood, S. C., \$100,000 (100).

Chesapeake & Ohio

(Chesapeake District) *First Track*: Holden, W. Va., to Scarlett, 6.11 mi.; Carver, Ky., to Evanston, 15.70 mi.

Second Track: At Torchlight, Ky., 3.50 mi.

Grade Crossing Eliminations: Overcrossings: Westham, Va., at no cost to the railway (85). Subways: Lytle st., Fostoria, Ohio, with federal aid, at a cost of \$80,000 to the railway and \$994,500 to others (3).

Important Work Undertaken: Construction of a low-level coal pier, including incidental track facilities, Newport News, Va., \$8,785,500 (100); replacing pedestals under seven bents of viaduct, Richmond, Va., \$119,000 (100); replacing steel-pin spans in viaduct from 14th street to Tredegar street, Richmond, Va., \$3,155,000 (45); replacing steel spans in three bridges, Fulton, Va., \$306,000 (started); rearrangement of signals to provide adequate stopping distances for trains, including incidental track changes, Richmond, Va., to Clifton Forge, \$197,070 (70); installation of C.T.C., including track changes and water supply facilities, Balcony Falls, Va., to Iron Gate, \$700,600 (95); revision of alignment, Craigville, Va., \$479,000 (80); revision of alignment, Alleghany, Va., to White Sulphur Springs, W. Va., \$157,170 (100); revision of alignment, including the construction of a new tunnel, Fort Spring, W. Va., \$2,413,276 (100); revision of alignment, Lowell, W. Va., \$672,420 (100); extension of two stalls in enginehouse, Hinton, W. Va., \$200,420 (started); replacing a 115-ft. turntable with a 130-ft. table, Hinton, W. Va., \$154,400 (started); revision of alignment to eliminate switchbacks, Claypool, W. Va., to Meadow Bridge, \$1,183,000 (100); construction of an additional freight main track and additional yard track, Huntington, W. Va., \$1,721,700 (100); an extension to a general storeroom, Huntington, W. Va., \$260,000 (10); reconstruction of approaches to bridge, Kenova, W. Va., \$1,917,700 (10); construction of extension to Laurel Fork subdivision, Clothier, W. Va., \$1,277,250 (100); installation of interlocking switches and signals, including the installation of C.T.C., Logan, W. Va., \$211,950 (100); rearrangement and extension of yard, including the construction of an office building, Danville, W. Va., \$701,000 (100); reconstruction of bridge and concrete box culvert, Amherstdale, W. Va., \$121,000 (100); construction of mine track, Wilber, W. Va., \$225,805 (90); extension to the Trace Fork subdivision, Holden, W. Va., \$3,148,100 (99); tracks to serve coal mine, Barrett, W. Va., \$848,365 (100); tracks to serve coal mine, Stowe, W. Va., \$185,350 (100); tracks to serve coal mine, West Va. No. 2, W. Va., \$106,200 (100); reconstruction of an abutment for bridge, Guyandot, W. Va., \$132,000 (started); construction of an extension to passing track, Bobbs, Ky., \$321,000 (100); a concrete coaling station to replace frame, Paintsville, Ky., \$253,700 (100); installation of C.T.C., including track changes, Beaver Junction, Ky., to Shelby, \$512,250 (25); construction of an extension to Dawkins subdivision, Carver, Ky., \$4,527,500 (100); yard and engine terminal improvements, Shelby, Ky., \$3,272,700 (96); concrete coaling station to replace frame, Martin, Ky., \$109,500 (100); tracks to serve coal mine, Gearheart, Ky., \$489,525 (98); extension to a subdivision, Wayland, Ky., \$6,564,700 (100); tracks to serve coal mine, Myra, Ky., \$536,800 (100); extension to an enginehouse, including the installation of drop-pit tables and an additional engine hoist, Russell, Ky., \$220,700 (100); construction of a Y.M.C.A. building, Russell, Ky., \$1,164,800 (95); installation of ten stalls in enginehouse, Russell, Ky., \$589,000 (100); enlarging westbound classification and receiving yard, Russell, Ky., \$5,070,000 (100); installation of 130-ft. and 115-ft. turntables, Russell, Ky., \$236,900 (started); construction of 3rd track, Riverton, Ky., to Limeville, including the installation of C.T.C., the extension of a bridge, and the addition to an interlocking tower and a 160-car set-off track, Russell, Ky., to Limeville, \$1,777,420 (100); reconstruction and extension of bridge, Augusta, Ky., \$209,000 (started); reconstruction of a bridge as a deck plate-girder viaduct, Brighton, Ohio, \$638,000 (100); construction of additional yard tracks, Parsons, Ohio, \$1,078,000 (95); installation of remote-controlled power switches and signals at passing tracks, including track changes, Columbus, Ohio, to Cummings, \$1,958,515 (15); installation of interlocking facilities at grade crossings with three railroads, including flasher signals, Fostoria, Ohio, \$240,000 (100); extension of enginehouse, including the replacement of a sandhouse and other incidental facilities, Walbridge, Ohio, \$350,200 (100); construction and improvements to yard, including the installation of car retarders, floodlight facilities, loud-speaker and pneumatic-tube communication systems, construction of a shop building and a yardmaster's office, Walbridge, Ohio, \$1,918,120 (100); installation of car retarders on empty return tracks, Presque Isle, Ohio, \$383,000 (95); installation of a 130-ft., a 115-ft. and a 100-ft. turntable, Parsons, Marion, and Pomeroy, Ohio, \$307,300 (started); extension of stalls to enginehouse, Peru, Ind., \$123,600 (100); installation of radio communication facilities between dispatchers' offices and helper engines, local freight and work trains, Parsons, Ohio, to Marion, \$104,000 (1); construction of roadway facilities for maintaining and servicing Diesel locomotives, entire Chesapeake dis-

trict, \$349,900 (15); connecting sanitary facilities to sewage disposal system, Newport News, Va., \$179,175 (100); revision of grade and alignment, Norwood, Va., \$136,000 (100); conversion of passing track to 2nd main track, including its extension to Irwin, Maidens, Va., to Irwin, \$233,400 (100); revision of grade and alignment, including the construction of a new depot, Keswick, Va., \$167,300 (100); construction of tracks to serve coal mine, including the construction of a bridge over the Guyandot River, Wilber, W. Va., \$347,000 (100); construction of tracks for coal washing plant, Ceredo, W. Va., \$1,046,300 (100); installation of C.T.C., including track changes and the construction of yard office, St. Albans, W. Va., to McCorkle, and Sproul, W. Va., to Brounland, \$378,175 (100); construction of tracks to serve coal mine, Argonne, W. Va., \$480,320 (100); tracks to serve coal mines, Accoville, W. Va., and Fanco, \$167,900 (100); conversion of passing track to a second main track, Torchlight, Ky., \$249,900 (100); construction of additional tracks in River yard, Ashland, Ky., \$151,825 (100); reconstruction of yard, including a new caboose track, two receiving tracks, 15 classification tracks and the installation of car retarders, Walbridge, Ohio, \$1,365,000 (100); construction of coaling and water stations, GB Cabin, Ohio, \$279,400 (100); installation of remote-controlled power switches and signals at passing track, Limeville, Ky., to Parsons, Ohio, \$1,054,575 (100).

(Pere Marquette District) **Important Work Undertaken:** Rearrangement of freighthouse facilities in connection with the construction of the John C. Lodge expressway, Detroit, Mich., \$800,000, of which the federal government and state paid the major part (60).

Chicago & Eastern Illinois

Important Work Undertaken: Construction of 14 classification tracks, 4 receiving and forwarding tracks, a new yard office, flood lighting facilities, and the installation of communication, compressed air, drainage and sewer lines, Wansford (Evansville), Ind., \$519,000 (10).

Chicago & Illinois Midland

First Track: Quiver, Ill., to Havana Junction, 2.40 mi.
Important Work Undertaken: Construction of 2.4 mi. of new main track, including 131-lb. rail and fastenings, the construction of a new brick depot, a 3,600-ft. siding, an interlocked crossing over the Illinois Central track, and four grade crossings, three of which are protected by automatic short-arm gates, Havana, Ill., \$265,000 (100).

Chicago & North Western

Grade Crossing Eliminations: Overcrossings: U. S. 30, Union Grove, Ill., cost divided 10 per cent to the railway and 90 per cent to the state, \$232,863 (100); U. S. Highway 141, Bellevue, Wis., work at state expense, (100); U. S. Highway 51, Madison, Wis., work at state expense (35); Subways: Becher and Burnham st., West Allis, Wis., at the expense of the railway and city, \$205,300 (60); Girard, Ill., new Highway 4, at state expense \$64,040 (100).

Important Work Undertaken: Construction of a two-track, 66-ft. through plate-girder bridge, West Allis, Wis., \$205,300 (60); reconstruction of a three-track, 33-ft. I-beam bridge on a new concrete-pile abutment east of Waukegan, Ill., \$65,700 (100); installation of concrete platforms at station, including a revision of highway and crossing protection at six crossings, Palatine, Ill., \$107,255 (100); installation of a new steam boiler with automatic ash and coal-handling equipment, Chicago shops, \$306,400 (started); reconstruction of bridge, replacing concrete slab deck with treated timber, Bertram, Iowa, \$140,800 (started); reconstruction of a bridge over Maple river, Iowa, involving the rebuilding of substructure and raising the bridge three feet, \$159,300 (started); reconstruction of bridge, Montour, Iowa, including raising it three feet, \$117,080 (started); revision of highway crossing protection at 17 grade crossings, Sheboygan, Wis., \$111,465 (85); revision of grade in connection with construction of Castle Rock dam by power company, between Dellwood, Wis., and Necedah, \$233,000 (70).

(Chicago, St. Paul, Minneapolis & Omaha) **Grade Crossing Eliminations:** Subways: Hudson, Wis., paid by railway and state (40); Itasca, Wis., paid by railway and state (20).

Important Work Undertaken: Construction of grain storage yard, East Minneapolis, Minn., \$135,000 (95); new boilers and auxiliary equipment installed in enginehouse, West Minneapolis, Minn., \$215,000 (100).

Chicago & Western Indiana

Important Work Undertaken: Construction of Diesel repair and servicing facilities, including the installation of a fuel storage tank at 51st Street yard, Chicago, \$148,000 (95).

Chicago, Burlington & Quincy

First Track: Flynn, Neb., to Long Island, Kan., in connection with Harlan County dam, 9.80 mi. in Neb., and 2.52 mi. in Kan., total 12.32 mi. (100).

New Road Under Construction: Siddons, Wyo., to Boysen 12.15 mi. (75); Bloomington, Neb., to Orleans, 20.12 mi., (started).

Important Work Undertaken: Rearrangement of tracks at the U. P. transfer, Council Bluffs, Iowa, \$110,315 (100); raising bridge 7 ft., Hamburg, Iowa, \$398,666 (5); improvement of facilities for an industry, Chicago, \$195,064 (100); construction of track for coal company, Waltonville, Ill., \$139,802 (50); improvements to subway, Crawford, Neb., \$372,942 (30); relocation of main track at Harlan County Dam project, Bloomington, Neb., to Orleans, \$1,259,774 (3); revision of grade, Sterling, Neb., to Lancaster, \$179,655 (30); improvement of mail-handling facilities, Omaha, Neb., \$160,435 (100); making an open cut out of tunnel, Armito, Wyo., \$134,134 (100); replacement of yard office, St. Joseph, Mo., \$113,258 (100); rearrangement of tracks in Murray yard, North Kansas City, Mo., \$107,501 (100); rearrangement of classification yard, Kansas City, Mo., \$156,546 (100); revision of grade in vicinity of Mark, Mo., \$167,024 (100); providing bank protection, Burlington, Iowa, to St. Louis, Mo., \$151,941 (100); construction of tracks for coal company, Astoria, Ill., \$466,262 (100); revision of grade, Amazonia, Mo., \$107,938 (100); construction of an addition to warehouse, Peoria, Ill., \$210,465 (100); installation of C.T.C., including track changes, Balfour, Iowa, to Pacific Junction, \$355,467 (100); revision of yard, Dayton's Bluff, Minn., \$920,225 (90); revision of grade and alignment at Chillicothe, Frederick and Avery, Iowa, \$1,280,100 (100); revision of grade and alignment, Clarence, Mo., to Bevier, \$495,180 (100); revision of Murray yard, North Kansas

City, Mo., \$1,597,584 (100); revision of grade of track and bridges, Callao, Mo., \$292,988 (20); revision of grade and reduction of curvature, Kissinger, Mo., \$160,998 (100); revision of grade and alignment in connection with Boysen Dam project, Siddons, Wyo., to Boysen, \$652,454 (90); relocation of branch main track in connection with Harlan County Dam project, Flynn, Neb., to Long Island, Kan., \$938,808 (100).

Chicago, Indianapolis & Louisville

Important Work Undertaken: Reconstruction of bridge over Wabash river, including the installation of seven additional piers and 15 new deck plate-girder spans to replace seven obsolete through-truss spans and two deck plate spans, Delphi, Ind., \$425,000 (100).

Chicago, Milwaukee, St. Paul & Pacific

Grade Crossing Eliminations: Overcrossings: Sanborn st., Mitchell, S. D., with federal and railway funds, \$54,000 by railway, \$486,000 by others (3); Mauston, Wis., with federal funds and no cost to the railway, \$275,000 (2); Middleton, Wis., with federal funds at no cost to the railway, \$250,000 (1); Sappington, Mont., federal-aid project, joint with Northern Pacific which pays \$17,400, C.M.St.P.&P. pays \$17,400 and state and federal government pay \$139,200 (10). Subways: Cedar ave., Minneapolis, Minn., with federal, state and railway funds; railway portion \$115,000, others \$1,031,000 (50); Willow road, near Techny, Ill., with motor-fuel tax funds, \$300,000 (70); Laramie ave., Chicago, with motor-fuel tax and railway funds, railway portion \$121,000, others \$950,000 (11); Wellington ave., Chicago, pedestrian underpass to be constructed with railway funds, \$79,216 (started).

Important Work Undertaken: Modernization and enlargement of passenger station, Sioux City, Iowa, \$225,000 (100); installation of two boilers in central power house, Milwaukee, Wis., \$227,500 (100); construction of a four-track Diesel house, Milwaukee, Wis., \$1,030,000 (100); installation of 940 lin. ft. of sheet pile bulkhead, Racine, Wis., \$109,000 (100); construction of a two-stall addition to Diesel house, Chicago, \$400,000 (100); alterations to enginehouse, Bensenville, Ill., \$105,600 (70); reconstruction of D.R.I.&N.W. bridge No. 7, joint with C.B.&Q., involving the replacement of a 100-ft. pony truss span with a new 75-ft. through girder and 35-ft. deck span on new masonry, Clinton, Iowa, \$116,000 (50); reconstruction of D.R.I.&N.W. bridge No. 17, joint with C.B.&Q., Shafter, Iowa, involving the replacement of two 100-ft. pony-truss spans with two 110-ft. through girder spans, \$131,000 (75); replacing five deck spans of bridge at Cone, Iowa, with one 110-ft. through girder and one 60-ft. deck span on new piers and altered abutments, \$105,000 (100); reconstruction of east rest pier of draw span over Fox river, Green Bay, Wis., \$141,000 (100).

Chicago, Rock Island & Pacific

Grade Crossing Eliminations: Overcrossings: Roosevelt road, Little Rock, Ark., constructed by state at no cost to the railway, \$70,000 (100); Highway K10, Paxico, Kan., constructed by the state at no cost to the railway, \$38,000 (100); Highway 7, Ola, Ark., constructed by the state at no cost to the railway, \$65,000 (100); Highway 7, Pleasant Hill, Mo., constructed by the state at a cost of \$10,000 to the railway and \$217,000 to others (100); East 4th st., Fordyce, Ark., constructed by the state at no cost to the railway, \$125,000 (50); Main st., Carbon Cliff, Ill., constructed at railway expense, \$126,000 (100). Subways: Harvard st., Peoria, Ill., constructed by the state at no cost to the railway, \$200,000 (35); highway 117, Stinnet, Tex., constructed by the state at a cost of \$18,870 to the railway and \$183,000 to others (15).

Important Work Undertaken: Construction of new icing facilities, Dalhart, Tex., \$193,000 (50); replacement of girders on bridge, Bridgeport, Okla., \$160,000 (80); new retarder hump yard, Armourdale, Kan., \$2,000,000 (100); new dust-collector system at Grain elevator, Armourdale, Kan., \$111,000 (100); new retarder hump yard at Silvis, Ill., \$3,500,000 (100); reconstruction of bridge, South Bend, Neb., \$305,000 (70).

Clinchfield

Important Work Undertaken: Construction of a Diesel locomotive repair shop, including two tracks, an inspection pit, an elevated concrete platform between the tracks, Whiting drop pit and a repair parts storeroom, office, toilets, shop rooms, lubricating oil tank, 10 25,000-gal. fuel tanks and a pump house, together with service stations adjacent to shop building, Erwin, Tenn., \$167,000 (100).

Delaware & Hudson

Grade Crossing Eliminations: Elimination of 13 grade crossings by the relocation of main tracks, Ballston Spa, N. Y., work done by state with state and railway funds, division of which has not been determined, \$2,760,000 (60).

(Wilkes-Barre Connecting) **Important Work Undertaken:** Replacement of superstructures of two bridges, including the construction of a new abutment, Hudson, Pa., \$780,000 (100).

Delaware, Lackawanna & Western

Grade Crossing Eliminations: Subways: Hiawatha boulevard, Syracuse, N. Y., cost to the railroad \$20,360 and to others \$670,140 (75); East Amherst st., Buffalo, N. Y., D.L.&W. and Erie each paying \$80,250 and the city \$160,500 (100).

Important Work Undertaken: Construction of an extension to the main Diesel shop including a parts reconditioning room, parts-cleaning room, a locker and wash room, and a wheel and truck storage building, Scranton, Pa., \$333,000 (100); reconstruction of bridge, Onativia, N. Y., \$381,000 (75).

Denver & Rio Grande Western

Important Work Undertaken: Reconstruction of five tunnels, including replacement of timber lining with concrete and gunite and the portals with concrete, \$104,916 (100); acquisition of land, and the construction of 18 mi. of track for a train yard, including the connections to other lines, carmen's facilities, repair tracks, yard office, ice house, icing dock and track scales, and installation of signal protection, steam, air and water lines, fire protection and communication facilities, also including the retirement and dismantling of tracks and buildings at Utah Junction, North Denver, Colo., \$1,999,815 (100); retirement of various yard tracks

incidental to the construction of 9,941 ft. of yard track, including 13 turnouts and other necessary changes, Ogden, Utah, \$156,116 (100).

Detroit, Toledo & Ironton

Important Work Undertaken: Construction of a new engine terminal, Springfield, Ohio, \$750,000 (50); reconstruction of two bridges, one over the Auglaize river at Lima, Ohio, and the other over the Mad river at Springfield, Ohio, \$125,000 (85).

Duluth, Missabe & Iron Range

Important Work Undertaken: Construction of two mine tracks near Fraser and Eveleth, Minn., \$122,000 (100); construction of additional tracks near Fraser, Minn., \$295,000 (100); reconstruction of three bridges at Allen Junction, Duluth, and Bovey, Minn., \$168,600 (100); construction of a new track to serve mines at Chisholm and Aurora, Minn., \$131,200 (50); construction of new track system for mines near Coleraine, Minn., \$107,900 (100); construction of new track system for mines near Gilbert, Minn., \$108,000 (100).

Erie

Grade Crossing Eliminations: Overcrossings: Hawthorne, N. J., with 15 per cent of cost borne by the railway and 85 per cent by the state (10); Berdan ave., Fair Lawn, N. J., work done by state (100); Owego, N. Y., general elimination of crossings, work done by state with the cost to the railway not to exceed 15 per cent (15); South Work st., Falconer, N. Y., work done by the state with cost to the railway not to exceed 15 per cent (50); extension of East Amherst st., Buffalo, N. Y., work done by the Erie, D.L.&W. and city, half of cost borne by railways (100). *Reconstruction of Existing Grade Crossing Structures:* Palisade Interstate Park road, Sloatsburg, N. Y., work done by the state (100); Highway 499, Otisville, N. Y., work done by the state (50); Highway 52, Narrowsburg, N. Y., half of cost borne by the state and county (100); McKinley ave., Endicott, N. Y., work done by the state (100); widening Highway 965, Cuba, N. Y., work done by the state (100).

Important Work Undertaken: Construction of new passenger station and opening of Ward street across railway right-of-way, Paterson, N. J., (75); construction of new passenger station in connection with the elimination of Wagaraw Road grade crossing, Hawthorne, N. J., (100); construction of approach for connection into Union Terminal, Cleveland, Ohio, (100).

Etna & Montrose

Important Work Undertaken: Construction of a steel-frame, brick-and-tile repair shop for Diesel locomotives, McDonald, Ohio, \$110,000 (100).

Georgia & Florida

Grade Crossing Eliminations: Overcrossings: West Green, Ga., with federal aid at no cost to the railway, \$62,316 (100). *Reconstruction of Existing Grade Crossing Structures:* Vidalia, Ga., at no cost to the railway, \$100,000 (100); North Augusta, S. C., at no cost to the railway, \$22,000 (100).

Great Northern

Grade Crossing Eliminations: Overcrossings: Sixth ave., Minneapolis, Minn., joint with M.N.&S., total cost of \$215,296 borne 90 per cent by the state and 10 per cent by the railways; Seventh st., Minneapolis, Minn., \$75,380 (10); Judith Gap, Mont., work done by the state, \$2,350 (started); Thurman st., Seattle, Wash., \$117,000 (started); Oroville, Wash., work done by the state, \$1,520 (started); 10th ave., Great Falls, Mont., work done by the state, \$550 (25). *Subways:* Towner, N. D., work done by the state, \$215,438 (started); Trinidad, N. D., work done by the state, \$20,730 (started). *Reconstruction of Existing Grade Crossing Structures:* Belknap st., Superior, Wis., \$50,100 (started); 21st st., Superior, Wis., \$24,300 (started); Washington ave., Minneapolis, Minn., joint with the M.&St.L., \$54,200 (started); repairing bridges in St. Paul and Minneapolis, Minn., \$17,175 (20); 19th ave., Minneapolis, Minn., \$11,940 (started); Sioux City, Iowa, joint with the C.&N.W., \$4,500 (started); Wenatchee, Wash., joint with the state, \$3,446 (started); Central ave., Minneapolis, Minn., \$90,600 (started); 1st ave., Minneapolis, Minn., joint with the M.&St.L., \$26,850 (started); four bridges in St. Paul and Minneapolis, Minn., \$21,800 (25); Penn ave., Minneapolis, Minn., \$12,500 (started); Belknap st., Superior, Wis., \$30,200 (started); Osakis, Minn., \$8,800 (started); Broadway and Central, Minneapolis, Minn., \$105,000 (started); Robbinsdale, Minn., \$29,655 (started); Howard Lake, Minn., \$28,600 (started); Mississippi st., St. Paul, Minn., \$23,600 (started); Crystal Bay, Minn., \$5,400 (started); two bridges, Vancouver, B. C., \$53,400 (started); Red Lake Falls, Minn., \$2,500 (started); 26th ave., Seattle, Wash., \$24,000 (started); Lander st., Seattle, Wash., \$2,373 (started). *Raise bridge over state highway, Crookston, Minn., \$8,330 (started). Prepare plans for overhead bridges: Moorehead, Minn., \$1,000 (started); Parent, Minn., \$800 (started); Crookston, Minn., \$600 (50); Allouez, Wis., \$1,500 (started).*

Important Work Undertaken: Construction of storehouse and coach yard, King Street, Seattle, Wash., \$222,500 (100); remodeling of enginehouse for a Diesel shop, St. Paul, Minn., \$345,000 (100); reconstruction of bridges and culverts of the Spokane division, \$134,960 (80); enlarge electric shop, St. Paul, Minn., \$253,500 (75); remodeling of power plant, Minneapolis Junction, Minn., \$123,200 (100); remodeling of power plant, St. Paul, Minn., \$212,400 (15); revision of grade and alignment, Merritt, Wash., \$903,000 (started); enlarge freighthouse, Minneapolis, Minn., \$105,000 (started); construction of a central heating plant, Seattle, Wash., \$254,300 (started); sprinkler system in buildings, Glacier Park, Mont., \$120,100 (started); replace bridge, Silvana, Wash., \$249,000 (started); rock crib in the Missouri river, Williston, N. D., \$125,000 (started); revision of grade and alignment, Jennings, Mont., \$123,000 (started); installation of escalators in King Street passenger station, Seattle, Wash., \$133,600 (started); addition of a second story to depot, Havre, Mont., \$192,050 (80); extension of Diesel shop, Havre, Mont., \$425,500 (50); reconstruction of power plant, Grand Forks, N. D., \$247,500 (started); replacement of power plant, St. Paul, Minn., \$212,400 (15); installation of a motor-generator set in substation, Skykomish, Wash., \$462,500 (started); reconstruction of ore dock, Allouez, Wis., \$258,000 (100); reconstruction of bridges and culverts on the Spokane division, \$116,400 (2); reconstruction of bridges and culverts on the Cascade division, \$158,415 (started); remodeling of engine stalls into a Diesel shop, Inter-

bay, Wash., \$230,000 (10); reconstruction of ore docks, Allouez, Wis., \$400,000 (started); construction of an addition to a truck garage, Great Falls, Mont., \$126,700 (10).

Illinois Central

Grade Crossing Eliminations: Subways: North of Litchfield, Ill., \$26,299 paid by railway and \$236,692 paid by others (65).

Important Work Undertaken: Modernization of classification yard, Markham yard, Chicago, \$1,175,140 (55); renewal of spans in bridge over Ohio river, Cairo, Ill., \$6,266,920 (5); construction of a 400-ton steel coaling station, Centralia, Ill., \$131,850 (40); relocation and renewal of Wolf River bridge, Memphis, Tenn., \$104,230 (20).

Illinois Terminal

Grade Crossing Eliminations: Overcrossings: U. S. Highway 66 on South 6th st., Springfield, Ill., financed entirely by the state and federal government, \$253,000 (100).

Important Work Undertaken: Construction of shop and terminal facilities, East Peoria, Ill., \$150,000 (100).

Indianapolis Union

Grade Crossing Eliminations: Subways: Kentucky ave., Indianapolis, Ind., bridge structure and street work performed by state, track and railway facilities by railway, cost about 10 per cent to the railway and 90 percent to the state, \$1,250,000 (65).

Jersey Central Lines

Important Work Undertaken: Diesel-locomotive repair facilities, Elizabethport, N. J., including remodeling of a locomotive and erecting shop, construction of four tracks, installation of a new drop table and other facilities, \$387,466 (100).

Lehigh Valley

Grade Crossing Eliminations: Subways: Main st., Manville, N. J., contract awarded by railway and board of public utility commissioners, railway pays \$368,000 and others \$359,800 (95); Walnut & Lexington ave., Cranford, N. J., with federal aid, railway pays \$156,775, others pay \$280,000 (30).

Important Work Undertaken: Construction of Diesel servicing facilities, including a yard office, locker room and a storehouse, Tift Terminal, Buffalo, N. Y., \$449,902 (100); addition of Diesel servicing facilities to existing building, Sayre, Pa., \$242,000 (100); reconstruction of bridge over Reading, involving the replacement of an arch with a single-span bridge and including the realignment of Reading track, Quakake, Pa., \$215,960 (100).

Long Island

Grade Crossing Eliminations: Elimination of 12 grade crossings, Old Southern, Long Island, N. Y., to Rosedale, raising double-track railroad 18 ft. on an earth embankment for a distance of 3.5 mi. and four tracks on an earth embankment for a distance of about 1 mi., includes the construction of five new stations and platforms, and steel and concrete railway bridges at all crossings, work done by railway at a cost of \$8,100,000, with state participation (25); elimination of 11 grade crossings, Rockville Centre, N. Y., by elevating double-track railroad about 18 ft. for almost two miles. Includes the construction of a new station and high-level concrete island platform, steel and concrete bridges, and 2,400 ft. of continuous slab viaduct, work is being done by the state at a cost of \$6,155,000, in which the state participates (65).

Important Work Undertaken: Construction of 13 new substations in present electrified territory at St. Albans, N. Y., Cedar Manor, Kew Gardens, Bellaire, Lindenhurst, Babylon Yard, Rockaway Park, Bayside, Nassau Boulevard, Rockville Centre and Port Washington, \$5,000,000 (100).

Louisville & Nashville

First Track: Blair Fork branch, Jim Hill, Ky., to Jewell Ridge, 5.70 mi., \$1,037,583 (100).

Grade Crossing Eliminations: Overcrossings: Flomaton, Ala., a 100-per cent federal-aid project, \$185,000 (65); Clanton, Ala., a 100-per cent, federal-aid project \$150,000 (65); Arrington, Tenn., a 100-per cent federal-aid project, \$175,000 (10).

Important Work Undertaken: Installation of two escalators from track level to concourse, Union Station, Nashville, Tenn., \$100,057 (100); construction of repair shop for Diesel locomotives, including fueling, watering and washing facilities, together with tools and equipment, Louisville, Ky., \$362,372 (99); reconstruction of bridge over West Pascagoula river, Gautier, Miss., including the construction of 16 concrete-pile piers, the reuse of 14 existing through girders, and the addition of three deck girders, \$797,526 (100); installation of C.T.C., including necessary track changes, Irvine, Ky., to Perritt, \$860,015 (100); reconstruction of transfer table pits, South Louisville, Ky., \$129,494 (100); replacement and rearrangement of mechanical facilities, including a new coaling plant, Boyles, Ala., \$301,291 (100); rearrangement and improvement of freight-car repair facilities, South Louisville, Ky., \$178,188 (7); installation of C.T.C., including track changes, Hazard, Ky., to Blackey, \$524,098 (95); installation of C.T.C., including track changes, Amqui, Tenn., to Henderson, Ky., \$1,821,639 (15); construction of improved weighing, billing, yard and mechanical facilities, DeCoursey, Ky., \$851,200 (60); purchase and improvement of a coal company track, White City branch, Morton, Ky., including the construction of 2.46 mi. of way switching track and the rehabilitation of 4.20 mi., \$284,072 (100); construction of 2.52-mi. Camp Branch spur track from Pat, Ky., to Sapphire, \$252,160 (100); construction of 3.08 mi. of spur track to serve mines, Como, Ky., to Pee Vee, \$209,115 (100); construction of 2.22 mi. of spur track to serve coal mines, New Coal, Ky., to Fies, \$169,900 (100); construction of yard and terminal facilities, Dent, Ky., \$943,627 (52); replacing a deck-truss gridge having creosoted-timber, ballasted-deck pile-bent trestle approaches with four deck-girder spans on three concrete piers and two concrete-pier abutments and filling approaches to raise the base of rail about three ft., Birmingham division, \$112,564 (started).

Maine Central

Grade Crossing Eliminations: Highway Closed: Four crossings on unimproved town roads in the state of Maine.

Important Work Undertaken: Construction of fuel and sanding facilities for Diesel locomotives, Bangor, Me., \$104,000 (100).

Minneapolis & St. Louis

Important Work Undertaken: A Diesel-locomotive repair shop, including offices and other facilities, Marshalltown, Iowa, \$500,000 (75).

Minneapolis, St. Paul & Sault Ste. Marie

Grade Crossing Eliminations: Subways: State Highway 167, St. Huberts, Wis., railway expense \$5,000, cost to others \$120,000 (50).

Important Work Undertaken: Construction of a brick, concrete and steel Diesel servicing building, Minneapolis, Minn., \$160,000 (100).

Missouri-Kansas-Texas

Grade Crossing Eliminations: Subways: U. S. Highway 77, Gainesville, Tex., cost borne by state, aided by federal funds, \$168,000 (100).

Important Work Undertaken: Replacing a wheel shop, including the installation of new machinery, Denison, Tex., \$185,300 (100); installation of automatic block signals, including track changes, Waxahatchie, Tex., to Hillsboro, \$166,000 (100); installation of automatic block signals, including track changes, Granger, Tex., to Austin, \$234,400 (50); Diesel servicing facilities, Bellmead, Tex., \$163,000 (40).

Missouri Pacific

First Track: Reilly Lake, Ill. to Menard, 6.41 mi.; Arcadia-Ironton, Mo., to Hogan, 5.50 mi.; Gads Hill, Mo., to Piedmont, 1.04 mi.

Grade Crossing Eliminations: Overcrossings: Highway 7, Pleasant Hill, Mo., \$663,500, of which the railway paid \$3,500 (100); Seventh street, Joplin, Mo., \$426,500, of which the railway paid \$26,500 (100); U. S. Highway 79, Marianna, Ark., with federal funds, \$173,000 (100); Highway 82, Montrose, Ark., without railway expense, \$95,000 (100); Highway 512, Richland, Kan., \$98,750, of which the railway paid \$3,250, (30); Highway 62, Pyatt, Ark., without expense to railway, \$350,000 (100). Subways: Oil Mill st., Morrilton, Ark., at railway expense \$14,000 (100); U. S. Highway 66, Cartersville, Mo., without expense to the railway, \$235,000 (10); U. S. Highway 66, Fourth st., Webb City, Mo., without expense to the railway, \$645,000 (25); Fifth st., Atchison, Kan., with federal aid of \$376,000 and at a cost of \$27,300 to railway (90); Highway 49, Gads Hill, Mo., at railway expense, \$65,000 (100); Highway 49, Vulcan, Mo., railway expense, \$90,000 (100).

Important Work Undertaken: Construction of Diesel facilities at St. Louis, Mo., \$250,000 (100); first application of secondhand tie plates at various points on system, \$192,000 (100); construction of an inspection pit for Diesel locomotives, St. Louis, Mo., \$145,100 (20); installation of flood protection work, Menard, Ill., \$1,226,000 (100); revision of grade, Fountain, Ill., \$275,300 (100); construction of bridge over Cache river, Cache, Ill., \$162,000 (100); revision of grade and alignment, Bismarck, Mo., to Piedmont, \$1,165,000 (100); revision of grade and alignment, Arcadia, Mo., to Hogan, \$248,000 (100); purchase of right-of-way and construction of culverts in connection with revision of grade and alignment, Vulcan, Mo., to Gads Hill, \$117,000 (100); revision of grade and alignment, exclusive of right-of-way, including the construction of new line, bridges and tracks, Vulcan, Mo., to Gads Hill, \$1,360,000 (85); installation of C.T.C., including track changes, Middlebrook, Mo., to Mill Spring, \$392,500 (90); installation of automatic block signals, including track changes, McGehee, Ark., to State Line, \$219,300 (100); reconstruction of bridge, Sterlington, La., \$139,800 (100); construction of office and storeroom, Sedalia, Mo., \$135,000 (50); rearrangement of tracks at new flood wall, Kansas City Mo., \$253,400 (100); rearrangement and expansion of tracks, Kansas City, Mo., \$509,000 (98); construction of telephone building, Kansas City, Mo., \$103,370 (100); servicing facilities for Diesel locomotives, Osawatomie, Kan., \$598,000 (80); revision of grade on bridge over Arkansas river, Fort Smith, Ark., \$413,200 (5); temporary revision of grade and alignment, Palarm, Ark., \$104,800 (100); installation of air conditioning in general office building, St. Louis, Mo., \$196,490 (100).

(Missouri Pacific in Nebraska) *Important Work Undertaken:* Reconstruction of bridge Nehawka, Neb., \$104,000 (100); installation of boilers, Falls City, Neb., \$115,850 (100).

(Natchez & Southern) *Important Work Undertaken:* Construction of industrial lead and yard tracks, Natchez, Miss., \$267,600 (100).

(International-Great Northern) *Important Work Undertaken:* Construction of a new passenger station connected to a steel train shed, Austin, Tex., \$150,000 (100).

Monongahela

New Road Under Construction: Grant Town, W. Va., to point on Sugar run, Rivesville, W. Va., 8.71 mi.

Important Work Undertaken: Construction of Paw Paw branch extension, including two bridges, plus construction of 2,200 ft. of bituminous road, 2,700 ft. of tail track, one bridge, and 900 ft. of subgrade for wye connection, including a bridge at Rivesville, W. Va., \$1,980,000 (30).

Nashville, Chattanooga & St. Louis

Important Work Undertaken: Erection of a fireproof tower building, including the installation of "NX" interlocking plant, joint with Southern, at Howells, Ga., \$313,000 (100); relocation of 4.1 mi. of main track to raise grade above proposed lake of Allatoona dam, under construction by War Department, eliminates 723 deg. of curvature, and 1.6 mi. of line, Acworth, Ga., to Cartersville, \$1,723,000 (100).

New York Central

Grade Crossing Eliminations: Overcrossings: Highway 1860, Lyons Falls, N. Y. (100); Highway 5346, Remsen, N. Y. (100); Eddy road, Cleveland, Ohio (100); Subways: Highway 910, North Sandusky street involving the relocation of the railroad, Columbus, Ohio (100); Ontario "thruway", East Buffalo, N. Y. (started); Ontario "thruway", Fishers, N. Y. (100); Ontario "thruway", Liverpool, N. Y. (18); Reconstruction of Existing Grade Crossing Structures: Bridge C-11, Barnard, N. Y. (10);

bridge carrying Highway 5175, Black River, N. Y. (100); bridge 170.4a, East Chatham, N. Y. (100); Bridge 416, Fonda, N. Y. (100); Bridge L-161 on the Mahopac branch, Goldens Bridge, N. Y. (started); Bridges H-25 and AO-1, New York (started); overhead bridge, Pittsfield, Mass. (100); subway on Ware branch, Palmer, Mass. (100); Peekskill, N. Y. (100); Roots, N. Y. (100); Scotia, N. Y. (100); South Fort Plain, N. Y. (50); Walden, N. Y. (100); Williamstown, N. Y. (100); James st., Worcester, Mass. (100); Stony Point, N. Y. (75). Highway Closed: Ashford ave., Ardsley, N. Y. (31); Ridge road, Blasdell, N. Y. (70); Terrace, Buffalo, N. Y. (started); Broadway and Cross st., Hawthorne, N. Y. (25); State St., Herkimer, N. Y. (100); Broadway, Kingston, N. Y. (started); Geneva st., Lyons, N. Y. (started); Hiawatha boulevard, Syracuse, N. Y. (50); Lock and Gooding st., West Lockport, N. Y. (40); Coit road, Cleveland, Ohio (100).

Important Work Undertaken: Construction of additional tracks in east-bound receiving yard, including a new yard office, East Syracuse, N. Y. (100); improvements in yard, including the construction of 43,450 ft. of track and 22 turnouts, two yard offices, and a car-department building, plus the construction of a roadway along yard, Selkirk, N. Y. (100); filling pile bent trestle, Iona Island, N. Y. (100); replacing double-track pile trestle 250 ft. long, and 50 ft. high with a 15-ft. by 15-ft. reinforced-concrete box culvert 197 ft. long in fill, Reading Center, N. Y. (95); installation of additional boiler in power house, Buffalo, N. Y. (100); installation of standby facilities for servicing air-conditioned passenger equipment, Buffalo, N. Y. (100); installation of 1,000,000-gal. fuel-oil storage tank, Buffalo, N. Y. (100); extensive additional plant facilities and alterations for handling Diesel locomotives, Harmon, N. Y. (100); alteration to tracks, including incidental piping, signal protection, third-rail work, circuit breakers and other facilities, Harmon, N. Y. (100); boiler-water treating plant, including tanks, filters, piping and other incidental facilities, Harmon, N. Y. (started); installation of 1,000,000-gal. fuel-oil storage tanks, Harmon, N. Y. (100); installation of two car-washing machines for washing sides and roofs of passenger cars, including additional track, High Bridge, N. Y. (75); installation of 1,000,000-gal. fuel-oil storage tank, Minoa, N. Y. (100); extensions of a.c. distributing system, Grand Central Terminal, New York (40); additional substation at 86th st. and Park ave., New York (100); additional facilities for servicing air-conditioned cars and for charging car batteries, New York (95); construction of a two-story brick yard-facility building, New York (100); installation of a 3,000-kw. rectifier to replace motor-generator substation equipment, 110th st. and Park ave., New York (started); new passenger car repair facilities, including service building, air compressor building, paint shop, car-repair shop, wheel pit, transfer table, hoists and tracks, Rensselaer, N. Y. (100); extending and altering engine terminal, including work on stalls, drop pits, hoists, electrical and mechanical facilities, Selkirk, N. Y. (100); replacement of boilers in boiler plant, including electrical work, a new pump, dust collector, breeching, piping, and other facilities, West Albany, N. Y. (100).

Construction of facilities for transfer of cargoes from self-unloading boats to cars, Ashtabula Harbor, Ohio (100); renewal of portion of steel on bridge, (Collinwood) Cleveland, Ohio (100); extension of electrical appliance building, (Collinwood) Cleveland, Ohio (100); installation of fuel-oil storage tank and other Diesel servicing facilities (Collinwood) Cleveland, Ohio (100); extension of two stalls in enginehouse, including wheel drop pit improvements (Collinwood) Cleveland, Ohio (100); extension of Wolf Run branch, Phillips, Ohio (100); electric interlocking, Fostoria, Ohio (100); new passenger station, Toledo, Ohio (75); additional yard tracks in Panama yard, Toledo, Ohio (100); installation of a Diesel fuel storage tank and other facilities, Gibson, Ind. (100); replacements of boilers in power house, Gibson, Ind. (100); installation of fuel-oil storage tank and other Diesel servicing facilities (Englewood) Chicago (100); additions, extensions, and alterations to engine-terminal facilities (Englewood) Chicago (100); construction of Peters Creek extension, Summersville, W. Va. (100).

(Michigan Central) *Important Work Undertaken:* Construction of two wet cinder pits serving four tracks, including the installation of mechanical cinder-handling and storage equipment, and improved track arrangement involving the rebuilding of 1.7 mi. of track, Detroit, Mich. (100); installation of improved equipment, including new switchboards, improved circuit breaker and the construction of two circuit-breaker houses, Detroit, Mich., to Windsor, Ont. (100); installation of fuel-oil storage facilities, including two 120,000-gal. tanks, a pump house, pumping equipment, piping and other facilities, Detroit, Mich. (100); addition to car-repair shop, consisting of a steel frame with masonry and glass block walls, plus the installation of tracks, drains and other facilities, Detroit, Mich. (80).

(Boston & Albany) *Important Work Undertaken:* Construction of an electric supply substation with 83 outlets for air-conditioning cars, at Exeter Street and Huntington Avenue Yards, Boston, Mass. (100); construction of a connection for high-speed freight, Niverville, N. Y., to Post Road (80); installation of Diesel locomotive fueling facilities, including two 200,000-gal. tanks, West Springfield, Mass. (100); new Diesel locomotive repair shop, including inspection pits, platforms, drop pits, reclamation plant and other facilities, West Springfield, Mass. (88).

(Cleveland, Cincinnati, Chicago & St. Louis) *Grade Crossing Eliminations:* Overcrossings: Highway 534 at 86th st., Augusta, Ind. (100); Highway 987 at Hartwell ave., Cincinnati, Ohio (97).

Important Work Undertaken: Installation of automatic signals with remote controls at four locations, including electric switch locks on main-track switches, and extensions of passing tracks and installation of high-speed turnouts, Kenton, Ohio, to Berwick (100); construction of an extension to wheel shop, including wiring, heating, platforms, machinery foundations, extension of storage tracks, relocation of platforms, machinery foundations, tracks, office and locker room, Beech Grove, Ind. (100); construction of 2.5 mi. of track as connection to Illinois Central, and construction of a 2,900-ft. passing track at mine, Pana, Ill. (100); construction of 2.15-mi. extension to spur, the construction of 1,600-ft. runaround track and a 2,750-ft. passing track to serve mine, Harrisburg, Ill. (60); repair and renewal of bridge, Lockland, Ohio (100); rehabilitation of concrete arch involving extending the bridge approximately 11 ft. on each end, raising and extending wings, and pressure grouting and guniting the existing structure, Joan, Ill. (85); construction of an 8½-ft. extension on each side of a three-span concrete arch, involving raising the track six inches, building up wing walls and restoring and grouting the existing masonry, Taylor Springs, Ill. (50).

(Indiana Harbor Belt) **Important Work Undertaken:** Construction of facilities incidental to the Dieselization of Norpaul yard, including the construction of inspection pit, pump house, sand house and tower, the installation of oil tanks, pump, meter and oil lines, water, sewer and air lines, some electrical and necessary track work, Franklin Park, Ill. (100); construction of facilities incidental to the Dieselization of Argo yard, including a new sand house, pump house and compressor room, installation of oil tank, pump, meter, oil lines, air compressor, and electrical work, Argo, Ill. (100); construction of facilities incidental to the Dieselization of Blue Island yard, including a new pump house, and waiting room, the installation of oil tanks, pump, meter, oil lines, sewer and water lines, and necessary track work, Riverdale, Ill. (100); construction of facilities incidental to the Dieselization of Calumet Park yard, including a new sand house, sand tower, pump house and waiting room, and the installation of an oil tank, pump, meter, oil lines, sewer and water lines, Calumet City, Ill. (100).

(Pittsburgh & Lake Erie) **Grade Crossing Eliminations:** Star Junction, Pa., by reconstruction and relocation of a portion of Highway 51 (100).

Important Work Undertaken: Construction of new car repair facilities, including a brick building to be used for offices, locker room, tool room and garage, a brick paint house and a brick car inspectors' office, McKees Rocks, Pa. (95); installation of C.T.C., including track changes, the consolidation of car repair shops, the construction of additional yard capacity and a new brick yard office, Pennsylvania state line to East Youngstown, Ohio (100); making alterations to Wylie yard, including the rearrangement of lead tracks and changing No. 6 turnouts to No. 8 turnouts, to increase yard capacity, Wylie, Pa. (100); construction of car weighing facilities, including the erection of a track scale, yard office building and oil and tool house, and construction of 500 ft. of new scale track requiring 6,000 cu. yd. of fill, Lowellville Junction, Ohio (100); construction of new interlocking tower, including alterations to interlocking and track adjustments at "CH," McKees Rocks, Pa. (75); relocation of track and facilities, South 17th st. to South 24th st., Pittsburgh, Pa. (30).

New York, Chicago, & St. Louis

Grade Crossing Eliminations: Subways: East 83rd st., Chicago, at railway expense, \$30,160 (100).

Important Work Undertaken: Installation of a 60-ft. transfer table and the construction of storage tracks, Conneaut, Ohio, \$125,000 (100); coaling and cinder facilities, Cleveland, Ohio, \$105,000 (100); construction of interlocking plant, Fostoria, Ohio, \$204,000 (100); installation of C.T.C., including the extension of passing tracks, Arcadia, Ind., to New Haven, \$467,000 (100); new engine terminal at Calumet, Chicago, \$2,778,000 (50); purchase of telegraph facilities on entire system from Western Union Telegraph Company, \$582,000 (100); installation of C.T.C., including the extension of passing tracks, Frankfort, Ind., to Liberty, \$882,000 (100); installation of C.T.C., including the extension of passing tracks, Arcadia, Ohio, to St. Marys, \$657,000 (100); installation of C.T.C., including the extension of passing tracks, St. Marys, Ohio, to Liberty, Ind., \$860,000 (100); renewal of bridge, Dayton, Ind., \$102,000 (98); construction of tracks to serve an industry, Davin, Ind., \$275,000 (100); new engine terminal facilities, East Wayne, Ind., \$2,297,000 (10); installation of crossing protection at 11 streets, Hammond, Ind., \$153,000 (started).

(Wheeling & Lake Erie) **Important Work Undertaken:** Construction of car department building, Brewster, Ohio, \$138,000 (100); new yard office and locker building, Toledo, Ohio, \$96,000 (100); electrification of Maumee River bridge, Toledo, Ohio, \$173,000 (60); construction of dormitory and restaurant, Cleveland, Ohio, \$281,000 (100).

New York, New Haven & Hartford

Grade Crossing Eliminations: Overcrossings: Cross Bronx expressway, west of Tremont ave., New York, without expense to railway, \$950,000 (80); Bronx River Parkway extension, east of Tremont ave., New York, at no cost to railway, \$687,000 (10); Middletown expressway, Middletown, Conn., at no expense to railway, \$348,000 (50). Subways: Olneyville expressway, Olneyville, R.I., at no expense to railway, \$170,000 (started); bridge No. 30.28, Springfield line, Hartford, Conn., at no expense to railway, \$241,000 (90); bridge No. 39.31 Willimantic line, Hartford, Conn., at no expense to railway, \$225,000 (100); tunnel, Saybrook line, Hartford, Conn., at no expense to railway, \$619,000 (70). Reconstruction of Existing Grade Crossing Structures: Two bridges, Middleboro, Mass., at no expense to railway, \$83,000 (100); bridge 75.75, Northampton, Mass., at no expense to railway, \$75,000 (100); bridge 33.86, Attleboro, Mass., at no expense to railway, \$260,000 (2); bridge 12.66, Braintree, Mass., at no expense to railway, \$150,000 (100); track bridge 29.97, Shannock, R. I., at no expense to railway, \$260,000 (100); overhead bridge 97.94 and approaches, Mill Plain, Conn., at no expense to railway, \$193,000 (50); Putnam ave., Hamden, Conn., at a cost of \$60,000 to the railway and \$60,000 to others (90); Brandy Hill road, Thompson, Conn., at no expense to railway, \$79,000 (60); track bridge 18.12, Pawtucket, Conn., at no cost to the railway, \$318,000 (60); overhead bridge 77.05, Hampton, Conn., at no cost to the railway, \$150,000 (100); Silver st. overhead, Waterbury, Conn., at no cost to the railway, \$50,000 (100).

Important Work Undertaken: Installation of Teletypes and associated equipment for use with accounting machines and system, \$248,900 (100); reconstruction of portion of Morgan Street yard, Hartford, Conn., \$484,000 (95).

New York, Susquehanna & Western

Grade Crossing Eliminations: Washington st., Hawthorne, N. J., in conjunction with Wagaraw Road grade crossing elimination project being carried out by the Erie (10).

Norfolk & Western

New Road Under Construction: Cooper W. Va., to Lick Branch, 5.15 mi.

Grade Crossing Eliminations: Overcrossings: Lynchburg, Va., at a cost of \$18,250 to the railway and \$18,250 to the city (100). Subways: Norfolk, Va., work being done by railway and city forces at a cost of \$300,000 to the railway, \$300,000 to the city and \$300,000 to the state (started); Winston-Salem, N. C., work done by railway forces at a cost

of \$48,000 to the railway and \$2,000 to the city (100); Price, N. C., work done by railway and state forces, without cost to the railway, \$115,000 (100). Reconstruction of Existing Grade Crossing Structures: Farmville, Va., construction of a concrete subway to replace narrow double box culvert, work done by railway and state forces, without expense to the railway, \$135,929 (100); Nottoway, Va., replacement of narrow bridge with wider concrete and steel structure, without expense to the railway, \$105,300 (90); Petersburg, Va., widen present reinforced concrete overcrossing to 46 ft., without expense to the railway, \$55,300 (100).

Important Work Undertaken: Installation of switching lead and track at passenger station, including an all-relay type interlocking plant, Roanoke, Va., \$615,800 (90); installation of C.T.C.-type control interlocking plant and electro-pneumatic switch movement, plus control of switches and signals, Pepper to Dry Branch, and at east end of Vicker passing siding, including the installation of coded track circuits and incidental track changes, Roanoke, Va., to Walton, \$473,000 (60); modernization of passenger station, Lynchburg, Va., \$340,000 (100); construction of new enginehouse, machine shop, office, wash and locker buildings, inspection pit and drop pit, boiler house with coal bin, boiler, stoker and piping, sand house, coal hoist, ash hoist and sand tower, watering facilities and necessary track to serve engine terminal, Pulaski, Va., \$300,000 (100); addition of 3.423 ft. to a passing siding, including power switches at each end, remote controls, installation of two No. 20 crossovers, signals on both main tracks for movement in either direction, installation of signal apparatus to control interlocking at D.T.&I. crossing at Ironton, and the installation of an electro-pneumatic interlocking switch machine at Kenova, including a No. 20 power-operated crossover, and the equipping of present crossover with power switches, Kenova, W. Va., to Rex, Ohio, \$252,000 (100); construction of a new brick, steel, and reinforced-concrete office building, five stories high, including office furniture and steam line from power house, Bluefield, W. Va., \$1,200,000 (100); reconstruction of 20 bridges, including the installation of steel girders or precast concrete slabs, and the rebuilding of backwalls and piers, Radford, Va., to Bristol, \$213,850 (80); reconstruction of 10 bridges, including the installation of new steel girders or precast concrete slabs and the rebuilding of backwalls and piers, Columbus district, Ohio, \$114,800 (90); acquisition of land and construction of a brick, steel and concrete three-level passenger station, including the lowering of Norfolk & Western tracks and the raising of C. & O. tracks and the rearrangement of other tracks, Waynesboro, Va., \$800,000 (15); remodeling and modernization of passenger station, Roanoke, Va., \$1,250,000 (100); construction of 5.15 mi. of new double-track main line, Cooper, W. Va., to Lick Branch, including a double-track tunnel about 7,100 ft. long, and new coaling station and wye track, installation of position-light automatic signals with coded track circuits and high-tension signal transmission line and a low-tension line, Bluefield, W. Va., to Iaeger, \$11,912,000 (70); construction of extension to retort house, including the installation of Vapor Drying apparatus at timber-preserving plant, Radford, Va., \$150,000 (95); combination brick and concrete enginehouse, machine shop, storehouse, ice house, wash and locker building, including inspection pit and driving-wheel drop pit, wheel-storage tracks, coal, water, and inspection facilities, including necessary track, Winston-Salem, N. C. \$450,000 (100); installation of air conditioning in both wings of old and new general office buildings, Roanoke, Va., \$1,130,000 (100); rearrangement of track, signal system and other facilities, including the railway's contribution in connection with the construction of a flood defense, Portsmouth, Ohio, to New Boston, \$216,500 (100); construction of fireproof freight station, Williamson, W. Va., \$450,000 (15); remodeling and modernization of passenger station, including the erection of a brick and concrete express building, Williamson, W. Va., \$210,000 (55); construction of a brick and concrete signal tower, including the installation of electro-pneumatic interlocking equipment with necessary signal controls for N. & W. and Pennsylvania movements, and construction of 5,767 ft. of additional track, Columbus, Ohio, \$308,000 (30); facilities for repairing freight cars, including 1,815 ft. of track, paving, drainage, retaining walls, wheel-storage tracks, brick and concrete garage, a concrete paint storage platform and steel poles for power lines, Williamson, W. Va., \$138,000 (40); installation of position-light automatic signals with coded track circuits, including necessary track changes, Iaeger, W. Va., to Williamson, \$541,000 (5); construction and extension of engine servicing facilities, including a fireproof building, a 200,000-gal. water tank, standpipe and pipe lines, an engine washing platform with shed and toilets, hydraulic ash handling plant, wash and locker facilities, extension to the enginehouse, drop and inspection pit, concrete roadways and alterations to existing tracks, and the provision of necessary air, steam, oil, and electric lines, plus the installation of boilers, stokers and coal-handling equipment at the steam plant, Portsmouth, Ohio, \$1,516,000 (10); construction of a 595-ft. track and installation of three stoker-fired boilers, complete with dust-collecting equipment, coal and ash-handling facilities, at shop, Roanoke, Va., \$950,000 (10); a brick and concrete combination enginehouse, machine shop, planing mill, storehouse, office, wash and locker and car repair building, including 100-ft. inspection pit and platforms; coaling and sanding facilities, including a two-track ash hoist, a 200,000-gal. tank and two standpipes, a 50-ft. inspection pit, reconstruction of 1,480 ft. of track, together with incidental steam, air, water and electric facilities and roadways, construction of an office, ice storage, coach cleaners' room and water treating plant and boiler room, together with a concrete pumphouse and well equipped with an electric motor, Petersburg, Va., \$483,000 (40); a one-story brick and concrete combination building for employees, and for storing materials and ice, including coal bin and stoker room with heating plant and 1,760 ft. of track, Bristol, Va., \$106,000 (started); installation of additional water-softener pump and control wiring, and the replacement of about 8,600 ft. of pipe line, Bluefield, W. Va., and Bluefield, Va., \$160,000 (50); installation of 2,200 ft. of main-line track, 4,050 ft. of siding, construction of a four-story fireproof storehouse building, with necessary concrete driveways, retaining walls and platforms, an overhead footbridge, a concrete platform and shed at oil house, extension of crane runway, relocation of tracks, fence and pole lines, Roanoke, Va., \$1,874,400 (60); installation of a new toilet, heating and lighting facilities, asphalt tile on floors, acoustical tile on ceilings, steel shelving, and intercommunication system, in present motive power office building, construction of a three-story concrete, steel and brick extension, including elevator and air conditioning, for two buildings, Roanoke, Va., \$441,000 (25); installation of C.T.C., including necessary track

changes, from east end of Auville yard to Carretta branch junction, including the rearrangement of tracks and construction of additional trackage, Dry Fork Branch, W. Va., \$308,000 (60); extension of passing track and construction of other tracks, including necessary signaling, Glade Spring, Va., \$120,000 (100).

Norfolk Southern

Grade Crossing Eliminations: Overcrossings: Varina, N. C., constructed by the state at an unknown cost (80).

Northern Pacific

Grade Crossing Eliminations: Overcrossings: Arcade st. St. Paul, Minn., work done by state with federal aid, \$5,200 paid by railway, \$445,000 by others (100); Highway, Sanborn, N. D., work done by state with federal aid, \$1,400 paid by railway, unknown remainder by others (100); Highway, Garrison, Mont., work done by state with federal aid, \$17,100 paid by railway, \$335,800 by others (100). Subways: Main st., Livingston, Mont., work done by state with federal aid, cost to the railway \$80,200, to others \$410,100 (35). Reconstruction of Existing Grade Crossing Structures: Edgerton st., Little Canada, Minn., reconstruction of subway to eliminate the center pier, work done by railway for which it paid \$21,600, and others paid \$14,000 (100); Emerson st., Seattle, Wash., reconstruction of viaduct, work done by city, \$15,000 paid by railway, \$249,000 by others (100).

Important Work Undertaken: Construction of new yard office with observation tower and other yard facilities, including a new pump house with pump, pressure tank and other water facilities incidental to the driving of a new well, rearrangement and extension of yard tracks and construction of a new ladder track and new switching lead, Northtown, Minn., \$333,900 (100); conversion of a 4,000-ton icehouse into a 100-ton ice manufacturing plant, including the installation of plumbing, heating and electric wiring facilities, sewer lines, machinery, etc., Laurel, Mont., \$452,000 (100); reconstruction of bridge to provide a steel structure on concrete piers with two single-span timber approaches, Grantsdale, Mont., \$102,800 (100); construction of a covered icing platform and incidental facilities, including additional trackage, Pasco, Wash., \$105,000 (100); remodeling shop for repairing electric equipment of Diesel locomotives, as well as the installation of overhead traveling crane, jib cranes and other auxiliary machinery, South Tacoma, Wash., \$228,500 (100); construction of a new power house, including the installation of two 300-hp. high-pressure boilers and overhead steam lines to serve depot and coach yard, Seattle, Wash., \$412,000 (100); a single-story prefabricated steel service building, a steel storehouse building, a concrete and brick oil house, a fuel-storage shed, including the installation of other facilities, King Street coach yard, Seattle, Wash., \$464,260 (45).

Pennsylvania

Third Track: 30th Street station, Philadelphia, Pa., 0.2 mi. *Grade Crossing Eliminations:* Overcrossings: Halethorpe, Md. (100); Shalks road, east of Plainsboro, N. J., eliminating two grade crossings (100); West Elizabeth, Pa., (50); Ridge road, Ebenezer Junction, N. Y. (60); Indian Church road, West Seneca, N. Y. (100); Columbiana, Ohio (100); U. S. 40, east of Vandalia, Ill. (75). Subways: Arbutus, Md. (50); 12th st., Erie, Pa. (100); Massillon, Ohio, a combination flood-control and grade crossing elimination project (75). Revision of Highway: Highway 176, Antes Fort, Pa. (100). Highway Closed: Lancaster, Pa., closing Shreiners grade crossing (100). These grade crossing projects will cost the railway \$1,562,145 and county, state, and federal governments \$5,128,923.

Important Work Undertaken: Revision of grade and alignment to eliminate speed restrictions, Watsonstown, Pa. (85); revision of grade and alignment to eliminate speed restrictions, Millersburg, Pa. (65); revision of grade and alignment to eliminate speed restriction, including the application of riprap on fill, Kinkora Heights, Pa. (97); extension of old and construction of new Diesel-locomotive terminal facilities, Enola, Pa. (85); development of industrial sites, Bladensburg road, including the extension of a bridge and incidental grading, culverts and tracks, Washington, D. C. (80); installation of moving stairs in Broad Street station, Philadelphia, Pa. (100); fuel-oil storage facilities, Harrisburg, Pa. (100); Diesel locomotive facilities, including a work pit, East Altoona, Pa. (100); a flood protection project involving the raising of a bridge over Locomotive creek, and a bridge over Millers run, plus incidental track work, Williamsport, Pa. (100); flood protection project, involving the raising of a bridge over Shamokin creek, with incidental track facilities, Sunbury, Pa. (100); extension of Pier 1, Baltimore, Md. (80); construction of tracks and buildings in Sparrows Point yard, Baltimore, Md. (98); additional apron track on Pier 53, Delaware river, Philadelphia, Pa. (100); new Curtis Park station, Academy, Pa. (100); additional storehouse and other Diesel facilities, Ivy City, Washington, D. C. (99); consolidation of power plants, Ivy City, Washington, D. C. (70); modernization of wheel shop, Enola, Pa. (5); additional facilities for handling Diesel switching locomotives, Philadelphia, Pa. (100); relocation of passenger station and tracks, Burlington, N. J. (95); coal-dumping facilities, including improvements at boiler house, providing increased steam output to the thawing plant to facilitate unloading of frozen coal, South Amboy, N. J. (100); start of Philadelphia improvement program, Philadelphia, Pa. (30); installation of two all-purpose cranes, Pier 11, Baltimore, Md. (1); facilities for treating sanitary sewage and waste waters from freight yard, Enola, Pa. (2); relocation and extension of electrification facilities required by the extension of Washington Terminal Company tracks and platforms, Washington, D. C. (35); installation of moving stairs, New Brunswick, N. J. (1); installation of transformers, receptacles, cables, etc., to handle additional air conditioning equipment, Sunnyside yard, Long Island City, N. Y. (100); installation of electric shortarm crossing gates at 11 grade crossings, replacing manually operated gates at Riverton, Roebling, Burlington, Palmyra, Riverside and Beverly, N. J. (15); installation of 735 ft. of steel sheet-piling bulkhead at Pier "B" to replace steel-and-timber bulkhead, South Amboy, N. J. (75); installation of circuit breaker and switches to provide remotely controlled sectionalizing of third-rail circuits, Pennsylvania station, N. Y. (10); construction of approximately 9,000 ft. of track to increase support yard capacity from 120 to 261 cars, incidental to large industrial plant, Metuchen, N. J., (35).

Construction of two concrete platforms between tracks, yard "D" at passenger terminal, Pittsburgh, Pa. (100); additional a.c. standby facilities for servicing passenger cars, Pittsburgh, Pa. (70); facilities for icing passenger cars, Pittsburgh, Pa. (95); first step in passenger-terminal improvements, Pittsburgh, Pa. (100); second step in passenger-terminal improvements, Pittsburgh, Pa. (7); undergrade bridge at Penn-Lincoln Parkway, Edgewood, Pa. (100); Diesel fuel storage facilities, Pitscain, Pa., (100); Diesel fueling facilities, Gallitzin, Pa. (90); reconstruction of bridge, East Pittsburgh, Pa. (20); revision of alignment, incidental to the construction of government flood-control dam, Blairsville, Pa., to Avonmore (92); new coaling station, Truxall, Pa. (50); reconstruction of bridge, Warren, Pa. (100); reconstruction of bridge, Buffalo, N. Y. (100); new electro-pneumatic interlocking plant, Roslyn, Pa. (2); elimination of clearance restrictions on five tunnels on the Panhandle division, Gould, Ohio, to Dennison (30); Diesel fueling facilities, Cleveland, Ohio, and Bedford (80); replacement of three 300-hp. boilers with two water-tube boilers at Dock 24, Cleveland, Ohio (100); improvements for industrial development, Dock 3, Cleveland, Ohio (4); reconstruction of three bridges, Caldwell, Ohio (100); new passenger station, Youngstown, Ohio (100); reconstruction of bridge, Holmesville, Ohio (100); reconstruction of bridge, Frederickville, Ohio (100); reconstruction of bridge, Powhatan, Ohio (100); construction of new passenger station, joint with the B. & O., Akron, Ohio (85).

Additional facilities for servicing Diesel locomotives at 59th Street enginehouse, Chicago (100); extension of 55th Street enginehouse for Q-2 type locomotives, Chicago (100); facilities for servicing Diesel locomotives, including the construction of service building between 12th and 18th st., Chicago (100); extension of six stalls of enginehouse, including the installation of a drop table for Q-2 locomotives, Fort Wayne, Ind. (95); extension of 11 stalls of enginehouse for Q-2 locomotives, Crestline, Ohio (100); extension of stalls in enginehouse at St. Clair avenue, Columbus, Ohio (100); additional relay tracks in Grogan yard, Columbus, Ohio (85); heavy repair facilities for Diesel locomotives at 20th Street shop, Columbus, Ohio (11); electro-pneumatic interlocking at "CW" tower to replace mechanical interlocking, Columbus, Ohio (75); extension of tracks in Undercliff yard, Cincinnati, Ohio (83); facilities at Pendleton shop to service Diesel locomotives, Cincinnati, Ohio (96); reconstruction and improvement of freighthouse, South Bend, Ind. (13); alterations to and extension of Third Street pool-car freight house, Detroit, Mich. (20); new Diesel locomotive facilities at 59th Street enginehouse, Chicago (100); additional facilities for servicing Diesel locomotives, Crestline, Ohio (100). Total cost of these projects, \$49,404,154.

(Pennsylvania-Reading Seashore Lines) *Important Work Undertaken:* Installation of 220-volt, three-phase, 60-cycle, 100-ampere standby facilities for servicing electro-mechanical air-conditioned cars, Atlantic City, N. J. (75); installation of automatic shortarm gates at six road crossings, Browning road to Cuthbert road, Collingswood, N. J. (100). Total cost of these projects, \$284,351.

Piedmont & Northern

First Track: 0.52 mi. in Gastonia, N. C.

Reading

Important Work Undertaken: Replacing stone arch with steel bridge to increase clearance, joint with Lehigh Valley, Quakake, Pa., \$215,000 (100); strengthening arch bridge, Phoenixville, Pa., \$110,000 (100); reconstruction of bridge in connection with the widening of Vine st., Philadelphia, Pa., joint with state, \$2,000,000 (65); improvements to terminal station building, including installation of electric stairways, elevators, ticket office, stores, etc., Reading Terminal, Philadelphia, Pa., \$1,600,000 (95); strengthening piers, and making improvements to ore-handling facilities, Port Richmond, Philadelphia, Pa., \$370,000 (100); strengthening various bridges on system, \$300,000 (100).

Richmond, Fredericksburg & Potomac

Important Work Undertaken: Extension of machine shop for Diesel servicing and repairs, including fuel storage tanks, tracks and shop machinery, Acca terminal, Richmond, Va., \$225,000 (100); extension of five tracks in northbound receiving yard to accommodate longer trains, Potomac yard, Va., \$133,900 (100); new interlocking plant and extension of southbound passing track, including the construction of two crossovers, Milford, Va., \$199,800 (100).

St. Louis-San Francisco

First Track: Near Wister, Okla., 7.17 mi.

Grade Crossing Eliminations: Overcrossings: Byers ave., Oklahoma City, Okla., without expense to the railway, \$523,000 (100); Highway 24, Prosper, Tex., without expense to the railway, \$131,000 (100); Highway 121, Camey, Tex., without expense to the railway, \$200,000 (25); Highway 550, Fort Worth, Tex., without expense to the railway, \$2,400,000 (100); 1st ave., north, Birmingham, Ala., with federal aid, joint with three other railways that paid \$194,222, the Frisco paid \$24,278, and others paid \$1,966,500 (50); U. S. Highway 61, Cape Girardeau county, Mo., without expense to the railway, \$208,300 (25). Subways: Highway 40, Marked Tree, Ark., without expense to railway, \$120,000 (100); extension of Iowa ave., to Orleans st., Memphis, Tenn., without expense to the railway, \$702,500 (100); Pennsylvania st., Memphis, Tenn., without expense to the railway, \$404,500 (75).

Important Work Undertaken: Diesel repair and servicing shop, Springfield, Mo., \$1,390,000 (90); new yard and appurtenances, Springfield, Mo., \$2,427,000 (82); new office building for yard employees, Springfield, Mo., \$170,000 (80); construction of a new line 7.2 mi. long around reservoir location, in connection with Wister dam, Wister, Okla., \$700,000 (100); revision of yard, including alterations of track, construction of a communication tower and the installation of floodlights, West Tulsa, Okla., \$200,000 (100).

Seaboard Air Line

Important Work Undertaken: Replacing light steel drawbridge on brick piers in Chattahoochee river with a heavier vertical-lift bridge on concrete piers, Omaha, Ga., (100); replacing light steel drawspan on old brick piers in Altamaha river with a heavier draw on concrete piers, Everett,

va., (61); construction of track to serve phosphate mine, Durant, Fla. (100); freight station, Atlanta (Howells), Ga. (100); tracks at phosphate plants, central Florida (100); extension to a yard, Tampa, Fla. (40); revising grade and alignment of five miles of branch main line, Bartow, Fla. (50); merchandising warehouse, Jacksonville, Fla., (100); merchandising warehouse, Tampa, Fla. (100).

Southern

Grade Crossing Eliminations: Overcrossings: Woodbury, Ga., by state with federal funds, at unknown cost, (100); Danville, Ky., by state at a cost of \$86,000 to the railway and a unknown cost to others, (100); East parkway, Memphis, Tenn., by state at a cost of \$65,000 to the railway with \$700,000 of federal funds (started); Sulphur Springs, N. C., by state with federal funds (started); Guthrie, N. C., by state with federal aid (started); over railway and French Broad river, Asheville, N. C., by state with federal funds (started) over railway and Dan river, South Boston, Va., by state with federal funds (started); Friendship, N. C., by state with federal aid (started); Warrenville, S. C., by state with federal aid (started); Meridian, Miss., by the state with \$145,000 in federal aid (started); Elysian Fields ave., New Orleans, La., work done by the city at a cost of \$225,000 to the railway and \$1,500,000 to the city (started). Subways: West North ave., Atlanta, Ga., under tracks of the Southern and N.C.&St. L., at no expense to the railway and an unknown cost to others (started); Iowa ave. at Railroad ave., Memphis, Tenn., by state with federal aid (started); Iowa ave., between East and Walnut st., Memphis, Tenn., by state with federal aid (started); Main st., Clinton, Tenn., by state at a cost of \$65,000 to the railway and \$65,000 to the state (100); Rock Hill, S. C., by state with federal aid (started); Mooresboro, N. C., by state with federal aid (started); Valdesse, N. C., by state at a cost of \$6,900 to the railway and with \$69,000 in federal aid; Gentilly road and Peoples ave., New Orleans, La., by state at a cost of \$5,300 to the railway and an unknown amount of federal aid (100). Reconstruction of Existing Grade Crossing Structures: First ave., Birmingham, Ala., replacement of bridge over Southern and three other railroads, by state with federal, state, city and railway funds, at a cost of \$85,000 to the Southern and \$2,100,000 to others (started); remodeling of subway by the state with federal aid at Rome, Ga., at an unknown cost (100); replacement of overhead bridge by state at Ayersville, Ga., with an unknown amount of federal aid (90); replacing overhead on Garvey ave., Elsmere, Ky., \$29,000 (100); replace 11th Street overhead bridge, Chattanooga, Tenn., work done by city, at a cost of \$25,000 to the railway and \$58,000 to the city and state (100); replacing subway, Moccasin Gap, Va., by state with federal aid (started); replacing overhead bridge, Liberty, S. C., by state with federal aid (started); replacing overhead bridge, Blacksburg, S. C., by state at its expense, \$40,000 (100); replacement of subway, near Clinchport, Va., at a cost of \$2,500 to the railway and an unknown amount of federal aid (started). **Important Work Undertaken:** Replacing steel viaduct with embankment and concrete pipe culvert, Millers Hollow viaduct, near English, Ind., \$231,700 (100); replacement of steel bridge with a new steel lift span, including approaches and piers, Tombigbee river, near Jackson, Ala., \$1,970,000 (75); replacing Cumberland River bridge and grading new approaches in connection with a revision of grade and alignment, Burnside, Ky., \$4,000,000 (70); replacing steel viaduct over

Little Blue river with steel bridge and embankment approaches, near English, Ind., \$181,600 (35); extending and converting 11 stalls of existing reinforced-concrete enginehouse into repair facilities for Diesel locomotives, including the construction of a machine shop and office extension, Spencer, N. C., \$221,000 (90); construction of facilities for repairing Diesel locomotives, including a new building, consisting of a repair shop, wash rooms, storeroom and offices, Dundee, Va., \$152,600 (100); passenger station, including open shed at each end and a passenger shed 350 ft. long, Raleigh, N. C., \$117,000 (60); repair facilities for Diesel locomotives, including the remodeling of two stalls and the extension of six others, John Sevier, Tenn., \$209,600 (100); additional yard tracks, and alterations to existing tracks, including a new interlocking plant and inter-yard communication system, Inman yard, Atlanta, Ga., \$1,929,000 (100); construction of industrial track, Goldsboro, N. C., \$277,000 (10).

(Carolina & Northwestern) **Important Work Undertaken:** New depot and tracks, Lenoir, N. C. \$125,000 (60).

Southern Pacific

New Road Under Construction: Near Armet, Ore., to the vicinity of Jasper, being constructed by government to replace portion of main line for new Meridian dam, 23.06 mi.

Grade Crossing Eliminations: Overcrossings: White Rock, Cal., with state and federal funds, \$64,000 (100); two locations, Bowman, Cal., with state and federal funds, \$116,000 (100); Black Butte, Cal., with state and federal funds, \$95,000 (100); Oakland, Cal., with state and federal funds, \$816,000 (50); Guthrie, Ariz., with state and federal funds, \$389,500, (90); Cambray, N. M., with state and federal funds, \$78,370, (10); Benham, Cal., with state and federal funds, \$128,000, (10); Sargent, Cal., with state and federal funds, \$263,000 (10); Overland, Ore., with state and federal funds, \$204,700 (100); Myrtle Point, Ore., with state and federal funds, \$117,000 (5); Veneta, Ore., with state and federal funds, \$122,000 (5); El Paso, Tex., three railroad tracks being depressed and eight overcrossings constructed through central district of city, and one overcrossing constructed to the east of town, for which Texas will pay \$1,500,000, El Paso, \$1,950,000, the Texas & Pacific and Union Depot Company, \$140,000, and the Southern Pacific \$1,890,000, a total of \$5,480,000 (72); Waldorf, Cal., with state and federal funds, \$44,000 (100); Fresno, Cal., with state and federal funds, \$825,000 (100); Subways: Aptos, Cal., with state and federal funds, \$184,000 (100); Aptos, Cal., with state and federal funds, \$170,000 (100); Sacramento, Cal., with state and railway funds at a total cost of \$721,000 (100); Oakland, Cal., with state and federal funds, \$395,000 (60); Roseville, Cal., with railway, state and federal funds, railway portion \$123,200, state and federal portion \$1,108,800 (90); Ligurta, Ariz., with state and federal funds, \$270,000 (90). Reconstruction of Existing Grade Crossing Structures: Widening subway, El Rio, Cal., with state and federal funds, \$164,000 (100).

Important Work Undertaken: Program of signal respacing, this year's portion on system, \$433,000 (100); installation of C.T.C., including necessary track changes, continuing program started last year, Alhambra, Cal., to Colton, \$359,000 (100); reconstruction of bridge over the Sacramento river, converting it from a 4,350-ft. open-deck to a ballast-deck structure, Redding, Cal., \$273,343 (100); increasing tunnel to standard clearance and to improve ventilation, including concrete sills and con-



Steam-powered passenger train on the Canadian Pacific

struction of a 4-ft. by 6-ft. heading above, to carry exhaust fumes, Cuesta, Cal., to Thyle, \$172,102 (75); renewal of 31,704 ft. of wood pipe with 12-in. Transite pipe and 9,721 ft. of wood pipe with 6-in. Transite pipe, as part of the program of renewing 130 mi. of pipe line, Duran, N. M., to Tony, \$182,525 (15); completion of additional yard facilities, involving 24,830 ft. of track, Aurant, Cal., \$173,810 (100); conversion of rider-operated hump yard to an automatic car retarder yard, including the extension of receiving yard tracks and replacement of track in hump yard which will be laid out in five groups of eight tracks each; construction of seven buildings of permanent type and five prefabricated buildings; includes the installation of a journal box oiler at hump, 9,510 ft. of drainage pipes, 5,800 ft. of air and water lines, and the construction of 164,300 sq. ft. of paving, the installation of floodlights, the construction of power lines, installation of communication facilities, involving high and low-level speakers, two-way radio control from humpmaster's office to engines and to yardmaster's office, plus the construction of a pedestrian overcrossings for employees, Taylor, Cal., \$2,448,045 (80).

Servicing facilities for Diesel locomotives, including the construction of two outside inspection pits and necessary trackage, installation of an engine washer, fuel supply facilities, lubricating-oil and engine cooling-water facilities, and sanding equipment, Roseville, Cal., \$185,000 (10); construction of fuel and water-servicing facilities at El Paso, Tex., Salem, Ore., Globe, Ariz., Lordsburg, N. M., Albany, Ore., and the construction of an elevated steel and concrete platform between two tracks in the Diesel shop, West Oakland, Cal., and the construction of a steel-frame corrugated iron building in which is installed a wheel lathe and which is served by 2,580 ft. of wheel storage track, Taylor, Cal., \$161,353 (various); installation of two concrete inspection pits complete with fuel masts, cooling water facilities, lighting, a single-brush engine washer, a 10,000-bbl. Diesel fuel storage tank, an unloading track, together with pump-house and supply lines, Ogden, Utah, \$250,700 (100); construction of an inspection platform with two raised tracks, fuel-oil servicing and water facilities, a sandhouse provided with a lift track for sanding engines, and the erection of a 10,000-bbl. Diesel fuel storage tank with unloading track, pump-house and supply lines, Sparks, Nev., construction of tracks, an inspection pit and Diesel fuel-oil facilities at Eugene, Ore., \$125,760 (90).

(San Diego & Arizona Eastern) *Grade Crossing Eliminations*: Overcrossings: La Mesa, Cal., with state and federal funds, \$87,000 (100); Chula Vista, Cal., with state and federal funds, \$144,000 (10); National City, Cal., with state, federal and railway funds, of which railway portion totals \$11,000 and state and federal governments will pay \$99,000 (10); National City, Cal., with \$14,100 of railway funds and \$126,900 of state and federal funds (10).

(Texas & New Orleans) *Grade Crossing Eliminations*: Overcrossings: Griggs road, part of Urban Expressway, Houston, Tex., at no cost to railway, \$725,000 (started) El Paso, Tex., includes depressing tracks through business section and the relocation and rearrangement of main lines and yard tracks, plus the construction of an overcrossing at Cotton ave., joint with city and Texas & Pacific, cost to the railway \$770,000, to others, \$4,327,000 (70); Shreveport, La., joint with I. C., T. & P., K. C. S. and city, cost to the railway \$93,400 and to others \$530,000 (5). Subways: East Seventh st. extension, Austin, Tex., \$799,000 paid by others (100); U. S. Highway 59, Lufkin, Tex., \$577,000 paid by others (100); U. S. Highway 90, Houston, Tex., \$25,000 paid by railway, \$583,400 by others (10); Lombano street, San Antonio, Tex., \$1,549,000 paid by others (100).

Important Work Undertaken: Construction of new tracks and abandonment of present tracks in connection with Dallas Central Boulevard project, Dallas, Tex., \$439,000 (75); addition of three tracks to yard, including the installation of a new drainage system, Houston, Tex., \$131,000 (60); relocation of 5,500 ft. of main track, including the raising of bridge 15 ft. and adjusting the runoff, Devil's River, Tex., \$486,000 (100); construction of facilities for servicing and fueling Diesel locomotives at various points on the system, \$600,000 (10).

Spokane, Portland & Seattle

Important Work Undertaken: Laying 12.98 track miles of 115-lb. rail, replacing 90 lb., Metolius, Ore., to Bend, \$337,445 (100); laying 6.67 track miles of 115-lb. rail, replacing 90 lb., Vancouver, Wash., to Wishram, \$172,274 (100); laying 3.70 track miles of 115-lb. rail, replacing 90 lb., Vancouver, Wash., to Wishram, \$120,062 (100); laying 11.16 track miles of 115-lb. rail, replacing 90 lb., Pasco, Wash., to Spokane, \$371,170 (100); laying 6.00 track miles of 115-lb. rail including six turnouts, replacing 90 lb., Metolius, Ore., to Bend, \$215,914 (100); construction of a reinforced concrete maintenance and repair shop and automotive service building, including an automobile hoist and overhead crane, and the construction of 600 ft. of track, Vancouver, Wash., \$124,400 (100); increasing ballast section, including the distribution of 82,000 cu. yd. of crushed ballast, with which to make a 6-in. lift, including the lining and surfacing of 41 mi. of track, Metolius, Ore., to Bend, \$220,100 (100); revision of grade and alignment, including the construction of 1,859 ft. of new track, and the relining and surfacing of 530 ft. of track, near Gateway, Ore., \$186,347 (100); application of a concrete lining to 749 ft. of tunnel, including the construction of a concrete portal at the east end, near Moody, Ore., \$151,800 (100); construction of a reinforced-concrete Diesel-electric shop, including the installation of overhead traveling cranes and drop-table facilities and the rearrangement of tracks, Vancouver, Wash., \$405,516 (100); installation of automatic signalling through 2nd district, between Wishram, Wash., and Pasco, to supplement station protection signals now in operation, Maryhill, Wash., to Mottinger, \$195,136 (100); applying additional ballast to 17 mi. of track, South Junction, Ore., to Metolius, \$139,600 (5).

Spokane International

Grade Crossing Eliminations: Overcrossings: Sullivan road, 12 mi. east of Spokane, Wash., constructed by county at no expense to railroad, \$250,000 (100).

Sumpter Valley

Grade Crossing Eliminations: Overcrossings: State highway, Baker, Ore., joint with Union Pacific, cost to railroad \$2,000, to state \$430,000 (50).

Texas & Pacific

First Track: Ville Platte, La., to Opelousas, 15.30 mi.

Important Work Undertaken: Motor transport garage, constructed of

reinforced-concrete block, and steel, Dallas, Tex., \$163,000 (100); freight terminal consisting of two-story headhouse, three platforms and incidental facilities, Dallas, Tex., \$1,190,000 (100); raising grade of main line about 27 ft. across the Morganza floodway for a total of seven miles (grading and drainage structures only), McNeely, La., to Red Cross, \$1,250,000 (90); construction of reinforced concrete trestle, 16,000 ft. long, Morganza floodway, La., \$4,000,000 (85); freight and passenger station, Midland, Tex., constructed of concrete and brick, \$175,000 (95); freight station, Longview, Tex., constructed of concrete, steel and brick, with both covered and open freight-handling platforms, \$156,000 (35).

Toledo, Peoria & Western

New Road Under Construction: Relocation of 4.5 mi. of track by the federal government in connection with the Farmdale dam, east of Peoria, Ill., \$1,858,430 (65).

Union Pacific

Second Track: Aspen, Wyo., to Altamont, 1.75 mi.; Montebello, Cal., to Downey Road, 3.95 mi.; side track reclassified as second track, Montebello, Cal., to Downey Road, 0.91 mi.

Grade Crossing Eliminations: Overcrossings: Access road, Troutdale, Ore., constructed by state with federal aid and without railway cost, \$78,000 (100); U. S. Highway 30, Como, Wyo., constructed by state with federal aid and without railway cost, \$125,000 (60); Dodson, Ore., constructed by state with federal aid and without railway cost, \$95,000 (100). Subways: Charleston boulevard, Las Vegas, Nev., constructed by state with federal aid and without railway expense, \$660,300 (100); East Los Angeles, constructed by state and city with federal aid and without railway expense, \$165,000 (100); Eddy st., Grand Island, Neb., constructed by railway, state and federal governments, at railway expense of \$120,000 and \$1,080,000 at expense of others (80); Troutdale, Ore., constructed at the expense of railway, state, and federal government, of which railway paid \$9,250, and others paid \$115,750 (100); Dewey ave., Baker, Ore., constructed by railway, state and federal government; railway to pay \$6,000, others \$467,500 (30). Reconstruction of Existing Grade Crossing Structures: Highway 15, Cascade, Idaho, relocation of subway by federal government at its expense, \$115,000 (100); Marshall, Wash., relocation of viaduct over U.P., S.P.&S., and N. P. tracks, at railway expense of \$8,000 and a cost to the state and federal governments of \$117,000 (100); Wells, Wash., replacing subway with viaducts constructed by state and federal governments at their expense, \$80,000 (100).

Important Work Undertaken: Replacement of eight elevators in office buildings with modern electric elevators, Omaha, Neb., \$400,000 (100); acquisition of eight acres of land and replacement of existing freight-house facilities, platforms and tracks, with a new one-story freighthouse, including platforms and 23,930 ft. of track, adjacent to classification yard, North Platte, Neb., \$909,720 (100); installation of automatic cab controlling circuits, including the replacement of 227 semaphore signals with 200 color-light signals and the rearrangement of pole line, Laramie, Wyo., to Green River, \$1,241,966 (50); acquisition of an 88 acre right-of-way and construction of 3.09 mi. of road and 3.10 mi. of second track, including two deck plate-girder bridges over Bitter creek, the construction of 2,009 ft. of yard track, to reduce the miles of road by 0.41 and the miles of second track by 0.40 between Rawlins, Wyo., and Green River, \$1,159,607 (100); replacement of a pile trestle approach span with two 90-ft. through plate-girder spans, near Belvue, Kan., \$100,000 (100); replacement of automatic color-light signals, including changing an overlap system to absolute permissive block operation, Sharon Springs, Kan., to Denver, Colo., \$289,369 (85); acquisition of 700 acres of right-of-way and construction of 4.62 mi. of west-bound main track, including a 5,000-ft. passing track and reinforced concrete tunnel 6,700 ft. long, and an interlocking plant at each end, Aspen, Wyo., to Altamont, \$7,713,340 (100); rearrangement of Union Pacific and joint Denver & Rio Grande Western tracks for interchange with the Salt Lake, Garfield & Western, and industrial tracks, including the construction of an interlocking plant with the Western Pacific, Salt Lake City, Utah, \$137,067 (50); replacement of semaphore signals with color-light signals on different spacing, including the extension of side tracks, Ogden, Utah, to McCammon, Idaho, \$1,517,080 (100); construction of a two-story concrete addition to present building, including paving, Seattle, Wash., \$117,600 (100); construction of a one-story concrete warehouse with office wing, including paving and spur track, Seattle, Wash., \$316,000 (100); acquisition of four acres of right-of-way for a revision in grade and alignment in which 1,873 ft. of branch main track was replaced by 1,859 ft. of new track, Gateway, Ore., \$164,713 (100); installation of a 59-mi. C.T.C. system, including track changes, Riverside, Cal., to Mission tower, and the construction of 3.95 mi. of second main track Montebello, Cal., to Downey road with C.T.C. operation in both directions on both main tracks, Riverside, Cal., to Los Angeles, \$2,831,485 (100); construction of 2,530 ft. of reinforced-concrete retaining walls with pipe railing, raising railroad embankment approaches for a 7-ft. raise at a bridge and participation in the raising and paving of street, Wilmington, Cal., \$150,000 (100); construction of a one-story warehouse and office building, including 174 ft. of spur track and the installation of yard paving, fencing, curbs, gutters and drainage on two streets, Los Angeles, Cal., \$145,000 (100); a 144-ft. extension to transfer platform with steel umbrella shed, and a new concrete platform and steel shed, joint with C.B.&Q., plus the replacement of 1,988 ft. of track with 2,444 ft. of track in a new location, Council Bluffs, Iowa, \$195,130 (100); a one-story locker and toilet building in the locomotive department area of Omaha shops, replacing facilities in machine shop, boiler shop and blacksmith shop, Omaha, Neb., \$240,000 (60); alteration of railroad facilities in connection with the construction of Eddy Street subway, Grand Island, Neb., \$150,000 (70); widening cuts to provide protection from drifting snow, Cheyenne, Wyo., to Bitter Creek, \$119,325 (100); construction of 58,250 ft. of additional snow fence at various locations, Cheyenne, Wyo., to Bitter Creek, \$120,120 (100); backfill of underground workings of old coal mine area beneath main track, Rock Springs, Wyo., \$127,787 (100); construction of a one-story warehouse building with office addition, Topeka, Kan., \$250,000 (100); rearrangement of signals, replacing present semaphores with color-light signals, including changing an overlap system of controls to absolute permissive block signals, including necessary line charges, Black Wolf, Kan., to Ellis, \$270,660 (65); replacement of existing ballast and the application of additional ballast from Deer Trail, Colo.,

to Manila, \$205,420 (100); construction of 148.24 mi. of right-of-way fence, between Tintic, Lyndyl, Borden and Milford, Utah, \$152,500 (100); addition to motor-car repair shop, Pocatello, Idaho, \$130,000 (65); two two-story frame dormitories and application of interior finishings to seven former barrack buildings, including furnishings and equipment for employees, Sun Valley, Idaho, \$281,500 (100); enlargement of tunnel bore to standard clearance, including the replacing of existing timber lining and two portals with reinforced concrete, plus extending tunnel 30 ft., Campbell, Ore., \$347,500 (30); relocation of boring mill and its machinery, including replacement of four boilers, 73 tram cars and a dinky locomotive at timber treating plant, The Dalles, Ore., \$148,700 (35); construction of a one-story concrete warehouse with 1,085 ft. of spur track, Seattle, Wash., \$251,542 (100).

Union

Important Work Undertaken: Construction of a classification yard incidental to a new industrial plant, West Mifflin borough, Pa., \$400,000 (95); construction of classification yard and connection serving a new industrial plant, West Mifflin borough, Pa., \$315,000 (95); construction of a shop for the repair and inspection of Diesel locomotives, including the installation of overhead cranes, shop machinery and other facilities, Hall, Pa., \$1,600,000 (50).

Virginian

Grade Crossing Eliminations: Overcrossings: Route 11, Salem, Va., constructed at state expense over Virginian and Norfolk & Western railway tracks, \$558,936 (100); Alberta, Va., additional overcrossing for northbound traffic on Route 1, constructed by state, \$538,510 (10). Reconstruction of Existing Grade Crossing Structures: Briery, Va., concrete and steel bridge replacing timber structure, constructed by state, \$102,597 (10).

Important Work Undertaken: Rehabilitation and extension of power plant, Narrows, Va., \$6,453,000 (85); lining three tunnels with concrete on Guyandot River branch at M.P. 23, \$75,500 (100); at M.P. 19.6, \$207,000 (75); and at M.P. 20.9, \$96,800 (100); construction of wash and locker building and extending storehouse building, Sewalls Point, Va., \$75,000 (100); installation of 300-ton track scale, Sewalls Point, Va., \$92,000 (100); installation of concrete culverts to replace five timber trestles, \$90,000 (100); construction of tracks to serve coal mine on Guyandot River branch, Itmann, W. Va., \$410,000 (65); track to serve coal mine, Tralee, W. Va., \$75,000 (100).

Wabash

Important Work Undertaken: Rearrangement and enlargement of yard, Hannibal, Mo., \$163,000 (100); construction of tracks to serve coal mine, Tracy, Iowa, \$108,000 (100); rearrangement and enlargement of yard, Moberly, Mo., \$409,000 (100); construction of repair shop for Diesel locomotives, Decatur, Ill., \$398,000 (100); installation of C.T.C., including track changes, Montpelier, Ohio, to New Haven, \$315,000 (100). (Ann Arbor) **Grade Crossing Eliminations:** Subways: U. S. Highway 23, Azalia, Mich., federal aid at no cost to railway, \$232,000 (100).

Western Maryland

Grade Crossing Eliminations: Between McCoolle, Md., and Keyser, W. Va., bridge over tracks of the W. M. and B. & O. and over the Potomac river, financed by an unknown amount of state and federal funds, at no cost to the railroad (30).

Western Pacific

Grade Crossing Eliminations: Overcrossings: 18th ave., Oakland, Cal., eliminating grade crossings at 19th ave. and 22nd ave., joint with Southern Pacific, Western Pacific participated in the cost to an extent of \$5,500, Southern Pacific to a total of \$16,500, with state and federal aid totaling \$198,000 (100); 5th ave., Oakland, Cal., constructed by the state at an unknown cost (100). Subways: 42nd ave., Oakland, Cal., constructed by the state with federal aid, at a cost of \$200,000, in which the railroad did not participate (100). Revision of Highway: Adeline st., Oakland, Cal., two crossings, converted to private crossings (100); Stevenson Ranch road, converted to private crossing (100); Park ave., Eberly, Cal., converted to private crossing (100); California Nursery road, converted to private crossing (100); California Nursery road, converted to private crossing (100).

Important Work Undertaken: Installation of C.T.C., including the extension of seven sidings to 125-car capacity, Portola, Cal., to Gerlach, Nev., \$2,294,000 (45); replacing 85-lb. rail with 115-lb. rail, Marysville, Cal., to Oroville, \$879,222 (100); widening bank and rebalasting main track, Sacramento, Cal., to Arboga, \$347,521 (100); widening bank and rebalasting main track, Burmester, Utah, to Salt Lake City, \$261,045 (100); replacing 110-lb. rail with 115-lb. rail, various locations, M.P. 663 to 683, \$512,541 (100); installation of C.T.C., including track changes, Stockton, Cal., to Oroville, \$1,571,100 (100).

CANADA

Canada & Gulf Terminal

Important Work Undertaken: Erection of a new station, Matane, Que., \$200,000 (100).

Canadian National

First Track: Cote Girard, Que., to Beattyville, 12.0 mi.

Grade Crossing Eliminations: Reconstruction of Existing Grade Crossing Structures: M.P. 45.48, Fergus subdivision, Ont., (will complete in 1950); Queen st., Parkdale, Ont., strengthening and replacement of corroded superstructure and double-track bridge, (will complete in 1950); reconstruction of overcrossing M.P. 117.2, Okanagan subdivision, B. C., (100); reconstruction of overcrossings, M.P. 97.6, Okanagan subdivision, B. C. (100); reconstruction of overcrossing, M.P. 5.5, Three Hills subdivision, Alta., (will complete in 1950); reconstruction of overcrossing and construction of a road diversion between M.P. 36.9 and 37.7, Miniota subdivision, Sask. (will complete in 1950); reconstruction of superstructure of overcrossing at Military st., Port Huron, Mich. (100). Revision of Highway: Lewiston Junction, Me., replacing subway with 75 ft. of 36-in corrugated pipe and fill (100).

Important Work Undertaken: Construction of new station and freight shed, Port aux Basques, Newfoundland (50); construction of International Aviation building, Montreal, Que. (50); strengthening of steel superstructure, Victoria bridge, Que. (100); construction of new passenger station, Chambord, Que. (50); installation of C.T.C., including track changes, West Junction to St. Rosalie Junction, Drummondville subdivision, Que. (50); construction of new freight facilities, Montreal, Bonaventure station (25); construction of new car shop facilities, Point St. Charles, Que. (50); ash handling facilities, Turcot, Que. (100); installation of a concrete pipe and fill to replace 538-ft. pile trestle, Grand Mere subdivision, Que. (50); diversion of passenger main tracks around yard, including rearrangement of other facilities, Mimico, Ont. (50); extension of industrial lead track and the construction of 17,600 ft. of private sidings, Scarboro, Ont. (50); modernization of boiler plant at car shops, London, Ont. (50); installation of two new boilers and returning two old boilers to shop, Stratford, Ont. (100); construction of dock and freight shed to replace facilities destroyed by fire, including track layout, Point Edward, N. S. (50); strengthening deck truss spans of Ottawa River bridge, Hawkesbury, Ont. (50); improvements to elevator, Midland, Ont. (25); bunkhouse for trainmen and enginemen, Hornepayne, Ont. (50); replacement of a three-track ferry slip on concrete foundations, Windsor, Ont. (100); construction of an annex to erecting shop, including necessary track changes, Stratford, Ont. (100); steam plant to serve central station area, Montreal, Que. (50); new branch line, Barraute, Que., to Kiask Falls (50); extension to yard, Vancouver, B. C. (60); installation of automatic block signals, including track changes, Spence's Bridge, B. C., to Hope (50); installation of automatic block signals, including track changes, Red Pass Junction, B. C., to Jackman (50); construction of a new stores building, Edmonton, Alta. (50); freight shed, including office and incidental tracks, Edmonton, Alta. (50); rearrangement of tracks in Nicholas yard, Battle Creek, Mich. (100); erection of fireproof building for new automatic telephone exchange and a building for garage and storage purposes, including the installation of an 800-line automatic telephone exchange, together with switchboard and associated equipment, Gander, Newfoundland (100); reconstruction of pole line, Riviere Bleue-Monk, Que. (100); reconstruction of pole line, St. Anne-St. Charles de la Pocatiere, Que. (100); reconstruction of pole line, Rivers, Man., to Melville (100).

Canadian Pacific

First Track: 23.03 mi. in Ontario.

New Lines Under Survey: From three miles north of Mattawa, Que., to Timiskaming, 35.00 mi.

Grade Crossings Eliminations: Overcrossings: Pacific Ave., Fort William, Ont., paid by railway, city and grade-crossing elimination fund (30). Subways: McTavish st., Fort William, Ont., reinforced-concrete subway, paid for by railway, city and grade-crossing elimination fund (30).

Important Work Undertaken: Reconstruction of bridge, involving the construction of a 176-ft. span and the relocation of a 235-ft. span at power development, St. Maurice Valley subdivision, Que., \$119,600 (100); new unit to freight yard, Montreal, Que., \$4,000,000 (100); construction of viaduct, Fort William, Ont.; preliminary work incidental to construction of new power house, Winnipeg, Man.; replacement of pile trestle with reinforced concrete culvert on the Rosemary subdivision; construction of new terminal facilities for rail, bus, and truck traffic, and for coast steamships, Nanaimo, B. C.

(Quebec Central) **First Track:** M. P. 65.1 to M. P. 67.3, 2.20 mi. in Quebec.

Grade Crossing Eliminations: Subways: M. P. 66.0, work done by railway, with cost absorbed 40 per cent by railway grade-crossing fund and the balance not yet distributed by Transportation Commission, total cost \$43,000 (100); M. P. 67.2, work done by railway with cost absorbed 40 per cent by railway grade-crossing fund and balance of cost not yet distributed by the Transportation Commission, total cost \$66,400 (100).

(Dominion Atlantic) **Important Work Undertaken:** Purchase and rehabilitation of a six-story Y.M.C.A. building, including renovation of interior, installation of new oil heating, plumbing and automatic sprinkler systems, fluorescent lighting and a modern front entrance, Halifax, N. S., \$700,000 (100).

Pacific Great Eastern

First Track: Quesnel, B. C., toward Prince George, 2.10 mi.

New Road Under Construction: Quesnel, B. C., to Prince George, 40.00 mi.

Important Work Undertaken: Revision of alignment, involving filling bridges at four locations, construction of a highway diversion and subway, \$300,000 (100); construction of concrete retaining walls and placing fills to replace four frame trestles, vicinity of M.P. 94, \$100,000 (100).

MEXICO

Mexican Pacific

First Track: Kilometer 2 to Camp Mochicahui, Sinaloa, Mex., 10.0 mi.

Minatitlan Al Carmen

Important Work Undertaken: New passenger and freight station, constructed of brick and concrete with steel roof trusses and corrugated asbestos sheet roofing, Minatitlan, Ver., \$300,000 (Mexican) (98).

National of Mexico

First Track: Agua Buena, Michoacan, to Pateo, 11.40 mi.

Grade Crossing Eliminations: Overcrossings: Othon st., San Luis Potosi, at a cost of \$47,500 to the railway and \$50,000 to others (100); Mexico-Veracruz highway, at a cost of \$8,100 to the railway (100). Subways: Mexico-Veracruz highway, at Kilo, V-333, at railway expense, \$7,200 (80).

Important Work Undertaken: Construction of a new passenger and freight terminal, including yard, buildings and shops, Guadalajara, Jal., \$2,500,000 (100); new passenger terminal, Chihuahua, Chih., \$250,000 (80); new passenger and freight terminal, including yard, buildings and shops, Jalapa, Ver., \$1,000,000 (10); new fully equipped hospital, Tierra Blanca, Ver., \$170,000 (90); new, fully equipped hospital, Matias Romero, Oax., \$170,000 (90); construction of additional tracks; buildings and shops for the improvement of terminal at Escobedo, Gto., \$450,000 (100).

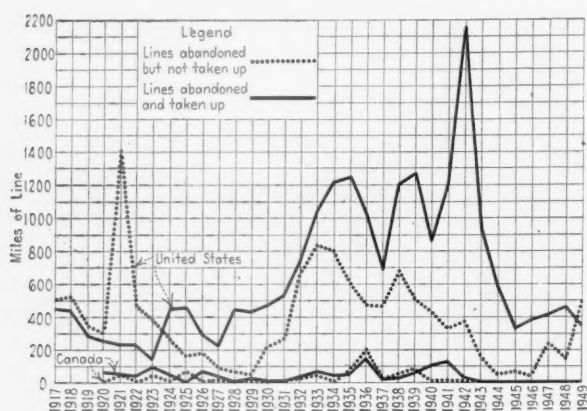
More Mileage Abandoned in 1949

Most lines "gave up the ghost" only when they could no longer hold out against subsidized competition

By HENRY E. MICHAEL
Associate Editor



To hold down the cost of dismantling lines, special equipment is often developed and used to handle rails, ties and bridge materials



Lines abandoned in the United States and Canada—1917 to 1949, inclusive

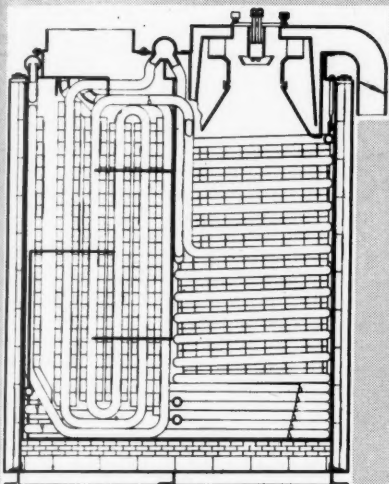
The tendency of numerous communities and many of their shippers to forsake their railroads for the questionable short-turn "advantages" of subsidized forms of transportation in 1949 reaped another harvest of railway line abandonments, with serious losses to the communities, most evident perhaps in railroad-paid taxes. In 1949 abandonments totaled 848 mi. of lines, including those finally taken up or on which service was officially discontinued. In addition, during 1949 the Interstate Commerce Commission granted authority to discontinue service on many more miles of lines, which authority may or may not be actually exercised. While the greater part of the mileage officially abandoned during the past year was previously abandoned by shippers, some of it was the direct result of improved service to shippers by the railroads, through the relocation of tracks on better grades and alinement, as well as by shorter routes.

United States Total 848 Miles

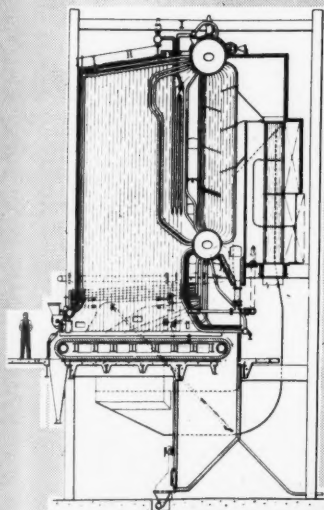
Included in the 848 mi. of road abandoned in the United States in 1949 were 350 mi. taken up and 498 mi. on which service has been discontinued pending removal of the track. The mileage thus officially abandoned increased the total of railroad lines taken out of service since 1916 to 33,943 mi. To a small extent this is offset by the small amount of new line constructed in this period. During the past 10 years 76 entire railroads have been abandoned, including three that were formerly Class I roads. In Canada, 33 mi. were abandoned—10 more than last year—while in Mexico 15 mi. were taken up.

The largest single abandonment in 1949 was the long-litigated Missouri & Arkansas, which, after discontinuing service on September 7, 1946, and later being authorized by the I.C.C. to abandon its line, finally sold two parts of it and started to take up the rest in two segments. The segments to be abandoned run from Neosho, Mo., to Wayne, 32.33 mi., and from Harrison, Ark., to Cotton Plant, 179 mi.—totaling 211.33 mi. It is reported that that portion of the old M. & A. from Harrison, Ark., to Seligman, Mo., plus branch lines to Eureka Springs, Ark., and to Berryville, totaling 70.17 mi., will be operated by a new company, the Arkansas & Ozarks, while the segment from Cotton Plant, Ark., to Helena, 58 mi., will be operated by another company, the Helena & Northwestern.

(Continued on page 260)

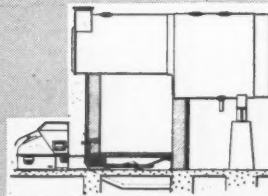


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ANNOUNCEMENT



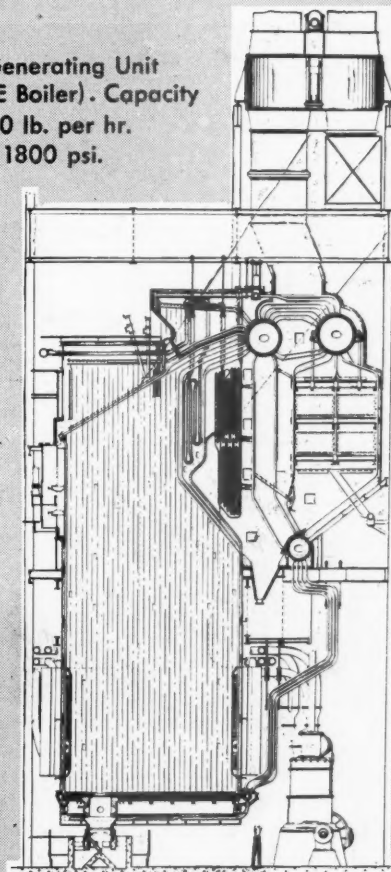
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Superheaters • Superheater Pyrometers • Exhaust Steam Injectors • Steam Dryers • Feedwater Heaters • Steam Generators • Oil Separators • American Throttles



LIMA-HAMILTON Diesel Locomotives—

First announced only last June, these locomotives are now in service on, or on order for, eight different railroads. Available in ratings of 800, 1200, and up to 2500 h.p., they are powered by one or two diesel engines of our own manufacture, of six or eight in-line cylinders—all 9" x 12".

First Choice



NILES Profiling Lathe—

This newest method for turning wheel treads makes possible a pair of wheels, floor-to-floor, every 20 minutes (less for light cuts). By making only a single cut, the conventional roughing, finishing and forming tools are completely eliminated. Other results: concentricities of .002"-.004"; exact tape size—every time; and, by cutting as little as $\frac{1}{8}$ "- $\frac{1}{4}$ ", a big saving in metal and wheel life.

Today's conditions demand that operating costs be reduced. Modern Lima-Hamilton products will do just that. Their advanced design, rugged construction, efficient operation, and dependable performance make them first choice for 1950.

*Lima Locomotive Works—Lima Shovel & Crane Div.
Niles Tool Works Co.—Hooven, Owens, Rentschler Co.
—all divisions of Lima-Hamilton Corp. of Lima and Hamilton, Ohio.*



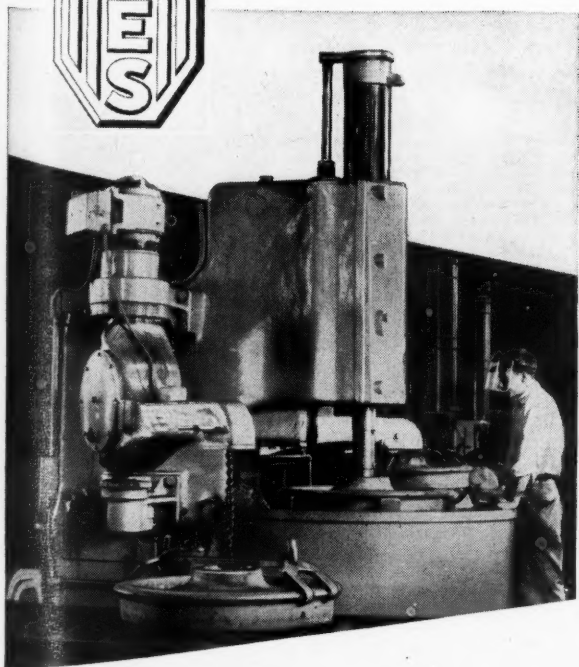
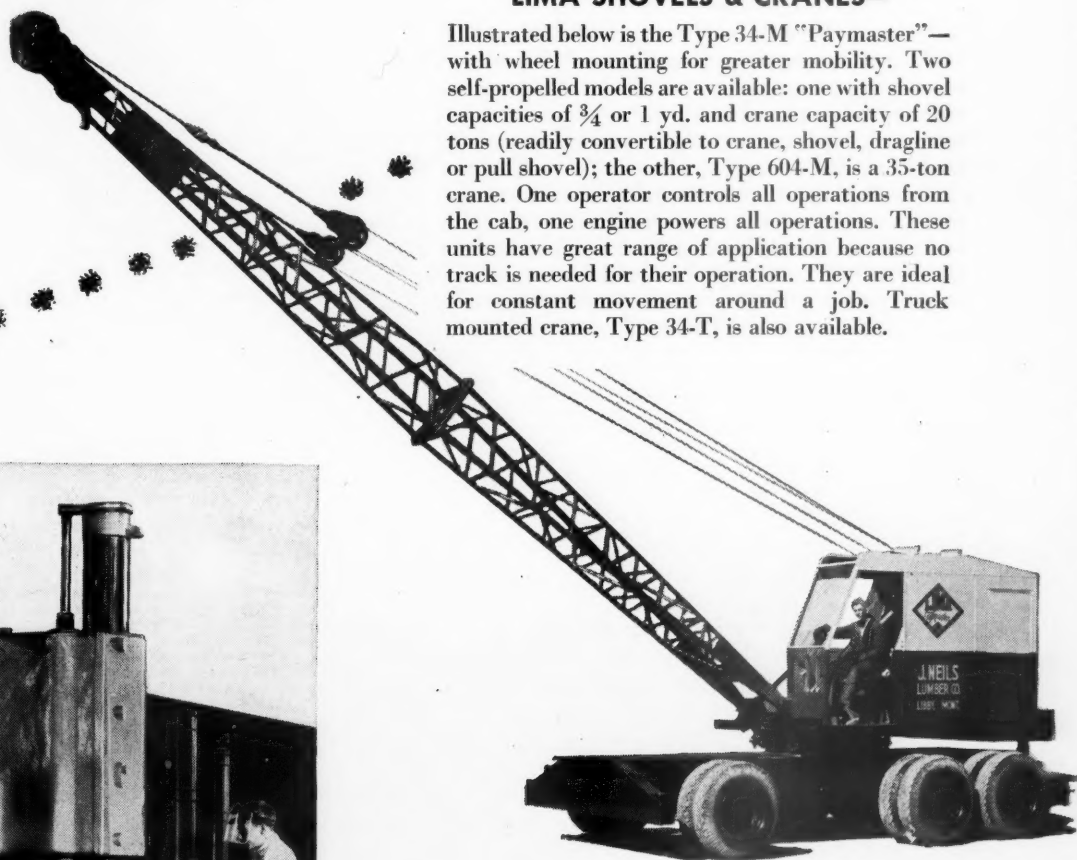
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for 1950

LIMA SHOVELS & CRANES—

Illustrated below is the Type 34-M "Paymaster"—with wheel mounting for greater mobility. Two self-propelled models are available: one with shovel capacities of $\frac{3}{4}$ or 1 yd. and crane capacity of 20 tons (readily convertible to crane, shovel, dragline or pull shovel); the other, Type 604-M, is a 35-ton crane. One operator controls all operations from the cab, one engine powers all operations. These units have great range of application because no track is needed for their operation. They are ideal for constant movement around a job. Truck mounted crane, Type 34-T, is also available.



NILES Hydraulic Car-Wheel Borers—

Working only 40 hrs., this hydraulic borer will turn out 300 wheels each week—consistently, and without strain or undue wear. That such production is entirely practical has been proved by reports from among 34 railroads and 9-car and locomotive builders who have purchased them. Table feeds and speeds for carbide tools. Cycle is entirely automatic.

(Continued from page 256)

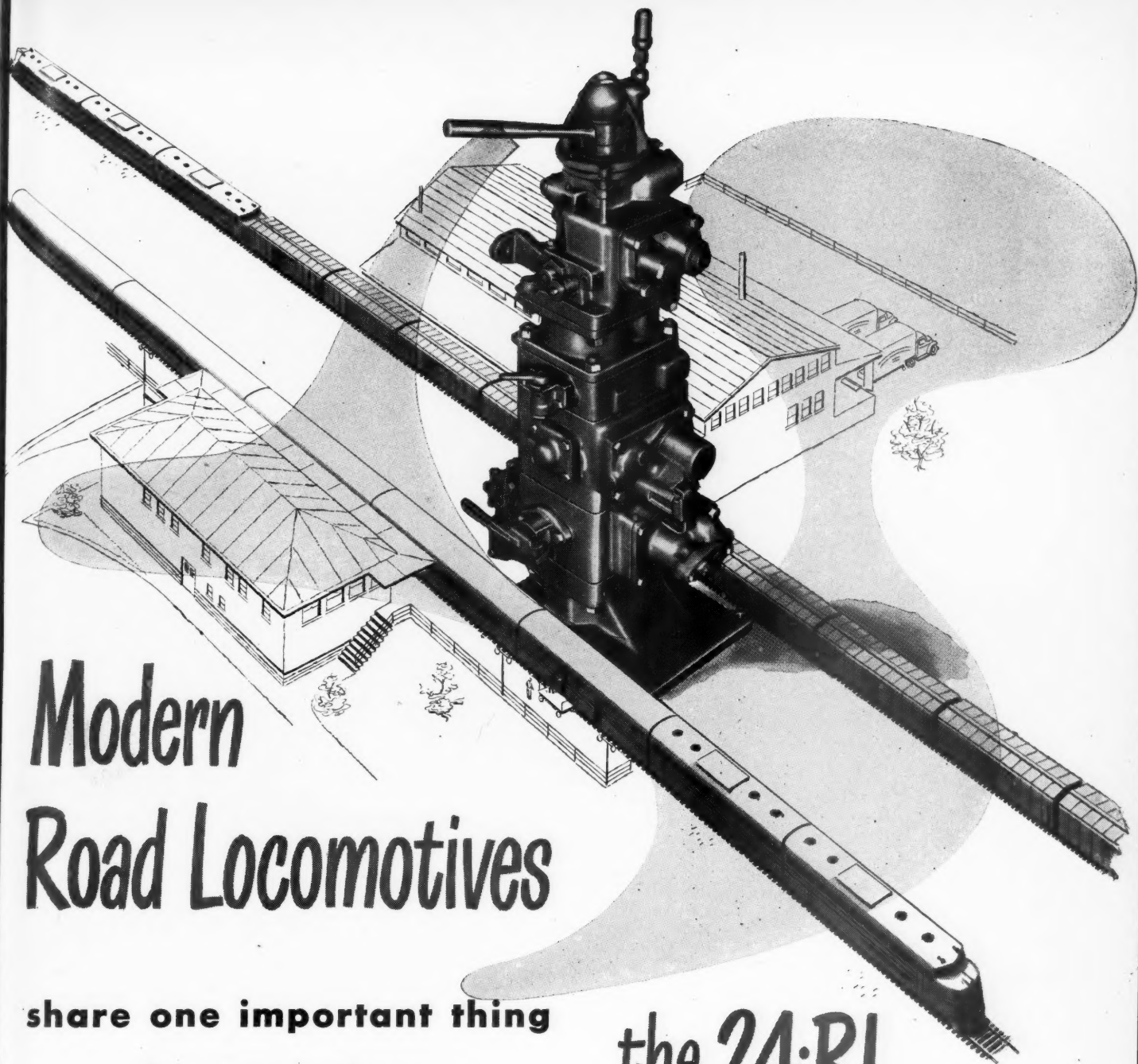
The next longest abandonment was the entire line of the Midland Terminal, extending 55.44 mi. from Colorado Springs, Colo., to Cripple Creek. This line's sole purpose was to serve a gold refining mill owned by the Golden Cycle Corporation, which also controlled the

railroad through acquisition of its entire capital stock in 1934. When the owning corporation built a new ore-reduction plant at Cripple Creek, the need for the railroad disappeared.

The third longest abandonment was that part of the
(Continued on page 262)

LINES ABANDONED IN THE UNITED STATES, CANADA AND MEXICO IN 1949

	Lines abandoned and taken up (miles)	Lines abandoned but not yet taken up (miles)		Lines abandoned and taken up (miles)	Lines abandoned but not yet taken up (miles)
United States					
Alton & Southern (St. Louis & Ohio River)			Southern Pacific		
Southeastwardly from Reeb station, Ill.	4.30		Mina, Nev., to Tonopah Junction	7.97	
Atlantic Coast Line (Tampa Southern)			At Clifton, Ariz.	0.20	
Belpor, Fla., to Southfort	35.20		Gates, Ore., to Idanha		20.57
Boston & Maine			Southern System		
Rochester, N. H., to Westbrook, Me., sold to Sanford & Eastern, (an electric line)		44.91	McDowell, Ala., to Lilita		13.30
Chicago & North Western			Spokane, Portland & Seattle		
Beaver, Mich., to St. Nicholas		5.74	M. P. 2.72 to M. P. 3.47, Spokane, Wash.		0.75
Chicago & Burlington & Quincy			Springfield & Southwestern		
Burch, Iowa, to Truro	32.00		Entire line, Springfield, Ill., to Curran		7.33
Clearmont, Mo., to Shambaugh, Iowa	10.37		Tuckasegee & Southeastern		
Republican, Neb., to Kansas line		8.03	Entire line, Sylva, N. C., to East LaPorte		12.18
Kansas line to Long Island, Kan.		7.16	Texas & Pacific		
Delta Valley & Southern			Melville, La., to Opelousas		23.75
Near Denwood, Ark.		11.00	Union Pacific		
Illinois Central			Boelus, Neb., to Pleasanton	22.10	
Manela, Ill., to B.K. Junction (near Metropolis)	8.06		Logan Sugar Factory, Utah, to Logan Junction	1.48	
Jersey Central Lines			Gunn Junction, Wyo., to Gunn	3.93	
Highland Beach, N. J., to Highlands	1.09		Virginian		
West End branch, Long Branch, N. J.	0.31		Loop Junction, W. Va., to Winding Gulf		2.17
Mauricetown, N. J., to Port Norris	4.33		Western Pacific		
Lawndale Railway & Industrial Co.			Carbona branch, Cal., M. P. 2.33 to M. P. 4.36	2.03	
Entire line, Lawndale, N. C., to Shelby (narrow gauge)	11.05		West Feliciana		
Midland Terminal			Entire line, St. Francisville, La., to Angola		17.80
Entire line, Colorado Springs, Colo., to Cripple Creek		55.44	Western Maryland		
Minneapolis & St. Louis			Portion of Detmold branch	0.63	
Fosterdale, Iowa, to Tracy		5.25	White Pass & Yukon		
Mississippi Central			In Skagway, Alaska	0.83	
Hattiesburg, Miss., to Camp Shelby	6.81		Total (United States)	349.76	498.02
Missouri & Arkansas			United States (Electric Lines—engaged in interstate commerce)		
Neosho, Mo., to Wayne		32.33	Kansas City, Kaw Valley		
Harrison, Ark., to Cotton Plant		179.00	Bonner Springs, Kan., to Lawrence		21.40
Missouri Pacific			Pacific Electric		
Montieth Junction, Mo., to Mound City, Kan.	27.55		Arden Junction, Cal., to Mountain st., Glendale	2.50	
Dupo, Ill., to East Ivory	4.32		Piedmont & Northern		
Vulcan, Ill., to Bixby	2.32		Webb st., Gastonia, N. C., to Chestnut st.		2.22
Reily Lake, Ill., to Menard	6.41		Texas Electric		
Gads Hill, Mo., to Piedmont (relocation)	1.10		Waco, Tex., to Denison		173.70
Arcadia-Ironton, Mo., to Hogan (relocation)	1.62		Total (United States Electric Lines)	2.50	197.32
West Ivory incline track, near St. Louis, Mo.	0.69				
Arcadia-Ironton, Mo., to Hogan (relocation)		4.58	Main Track (Other Than First Track)		
(Gulf Coast Lines)			New York Central		
Shadyside, La., to Garden City	5.83		Putnam, Jct., N. Y., to Dykemans (eastbound only)	2.70	
Los Indios, Tex., to Headgates	0.91		Oswego, N. Y. (second main track)	0.58	
Moore Central			Van Cortlandt Junction, N. Y., to Marble Hill (sixth track only)	1.74	
Entire line, Cameron, N. C., to Carthage	10.11		Gardenville, N. Y., to Seneca yard connection (westbound only)	0.87	
Nacogdoches & Southeastern		28.30	Lines—West connection, Buffalo, N. Y., SS 51 to SS "SP" (eastbound only)	0.31	
Oil Springs, Tex., to Calgary			South Amsterdam, N. Y., to Frankfort, (eastbound track only)		47.00
New York Central			Total (Main Track Other Than First Track)	6.20	47.00
Sackets Harbor, N. Y., to Watertown Junction (Pittsburgh & Lake Erie)	9.05				
New Castle branch, Pa., survey station 8+38 to station 0+14	0.16		Canada		
Northern Pacific			Canadian National		
Stuart, Mont., to Norton Junction	2.04		Nevis, Alta., to Alix	9.49	
Norfolk Southern			Canadian Pacific		
Currituck branch, Euclid, Va., to Back Bay	16.50		North Bay subdivision, Ont., M. P. 19.00 to M. P. 32.37	13.37	
Onachita & North Western			M. P. 51.11 to M. P. 60.77	9.66	
Bethel, La., to Standard	10.50		Total (Canada)	32.52	
Pennsylvania					
Seaside Park, N. J., to Bay Head Junction	11.50		Mexico		
Arlington, Ohio, to Warwick	0.19		Mexican Pacific		
Toms River, N. J., to Seaside Park		6.53	Kilometer 7 to Experimental farm	6.00	
Petaluma & Santa Rosa			National of Mexico		
Leddy, Cal., to Santa Rosa		2.60	On line Mexico, to Acambaro	9.30	
Reading			Total (Mexico)	15.30	
Pine Grove, Pa., to Rausch Gap	12.71				
Rio Grande & Eagle Pass					
Entire line, Laredo, Tex., to Gardner	21.47				
Rochester, Hornellsville & Lackawanna					
Entire line, Hornell, N. Y., to Maraine		9.30			
St. Louis-San Francisco					
Sleeper, Mo., to Lebanon	7.34				
Near Wister, Okla. (relocation)	6.75				
Sabine & Neches Valley					
Entire line, Gist, Tex., to Deweyville	11.76				
Seaboard Air Line					
Alcoma, Fla., to Hesperides	1.30				
Lydia, S. C., to Timmons ville	17.10				
Tredegar, Ala., to Jacksonville	3.26				
Inverness, Fla., spur	2.09				
Lake Charm, Fla.	1.94				
At Ellenton, Fla.	0.55				



Modern Road Locomotives

share one important thing
between them . . .

the 24-RL

There is one vital piece of equipment that all modern road locomotives have in common—Westinghouse 24-RL Brake Equipment. Combining of various interchangeable sections provides a wide combination of functions, which completely meet the needs of all normal assignments.

The flexibility of the 24-RL is particularly helpful in cases where assignments have not been completely defined when locomotive construction starts. Selected sections can be inserted at any time. Substitutions may be made after locomotives are in service, with no change in basic piping, if changes in assignment make this desirable.

Several typical combinations, which suggest the broad possibilities of the 24-RL, are illustrated and described in Catalog No. 2058. A copy will be sent on request.



Westinghouse Air Brake Co.

WILMERDING, PA.



(Continued from page 260)

Atlantic Coast Line formerly serving the territory between Belpur, Fla., and Southfort, 35.2 mi. Although the 44.91 mi. of the Boston & Maine, between Rochester, N. H., and Westbrook, Me., is considered as abandoned from the ranks of so-called steam railways as a result of its sale to an electric line, the Sanford & Eastern, it will be continued in service.

Nine Entire Lines Abandoned

Nine entire railways were officially abandoned during the year. Some had been out of service for several years but had not been officially classed as abandoned until all efforts to sell them for continued use had been exhausted. The largest entire railway to lose its identity was the previously discussed Missouri & Arkansas. The next largest was the Rio Grande & Eagle Pass, previously operating between Laredo, Tex., and Gardner, 21.47 mi. The other entire lines abandoned were small roads that had discontinued service because mines, saw mills or other industries they served had become "worked out" or had elected to use other forms of transportation.

These nine abandonments of entire lines in 1949 compare with six in 1948, 2 in 1947, 3 in 1946, 4 in 1945, 8 in 1944, 3 in 1943, 14 in 1942, 14 in 1941, and

MILEAGE ABANDONED BY REGIONS IN 1949 AND ACCUMULATED TOTAL SINCE 1931

	Mileage abandoned in 1949	Accumulated abandonments since 1931 (miles)
New England states	44.91	1,058.93
North Atlantic states	55.61	2,250.18
Southeastern states	133.56	4,536.12
Middle Western states	131.18	6,020.89
Northwestern states	61.41	1,633.80
Southwestern states	392.85	5,521.59
Rocky Mountain-Pacific Coast states	27.43	2,274.69
Alaska	0.83	217.30
Total	847.78	23,513.50

13 in 1940. Thus, 76 roads have ceased to exist in the 10-year period just ended.

These statistics include, for each year, all lines abandoned during the year, regardless of whether the tracks were removed or not. Thus, tracks reported as not taken up during any year are not included in the totals for subsequent years when the tracks were actually removed.

Records Date Back to 1917

Since records of abandonments were started in 1917, yearly mileages abandoned have ranged from the low of 282 mi. in 1927 to the high of 2,515 mi. in 1942. Between 1917 and 1949, inclusive, a total of 33,943 mi. of track was abandoned. During this same 33-year period only 11,313 mi. of new lines were constructed, resulting in a net decrease of 22,630 mi. in the total mileage of the railways of the country. This is an average net reduction of about 687 mi. per year.

More total miles of lines were abandoned in Arkansas during 1949—190 mi.—than in any other state. Missouri ranked next with 69.83 mi.; Texas was third with 62.44 mi.; Louisiana was fourth with 57.88 mi.; and Colorado was fifth with 55.44 mi. In one of the accompanying tables, the abandonments in each state are shown for 1949 and accumulated since 1931. In another table the abandonments in the various regions in the United States, both during the past year and accumulated for the period 1932 to 1949, inclusive, are shown.

The total of 33 mi. of line abandoned in Canada during 1949 brought the total reported since 1932 to 1,274.

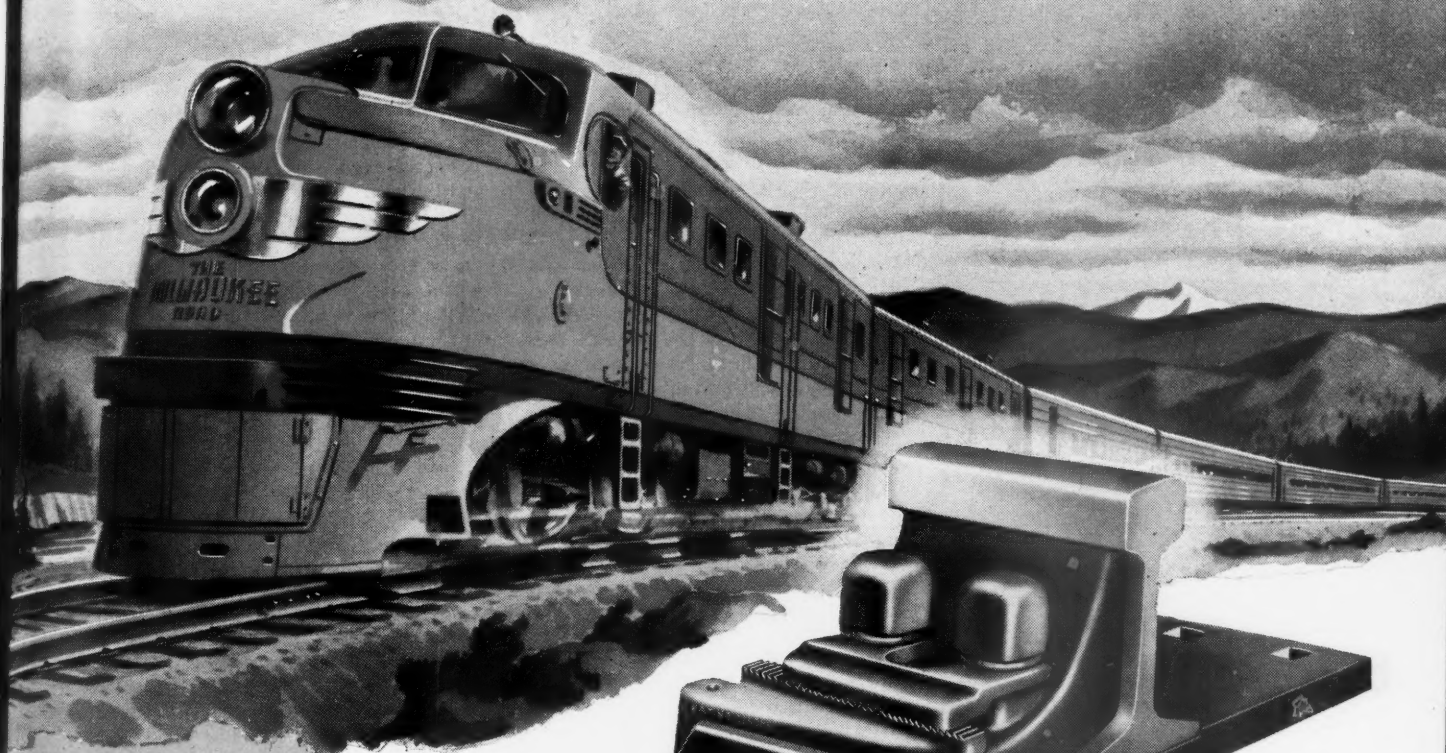
MILEAGE ABANDONED BY STATES IN 1949 AND ACCUMULATED TOTAL SINCE 1931

States	Mileage abandoned in 1949	Accumulated abandonments since 1931 (miles)
Alaska	0.83	217.30
Alabama	16.56	331.18
Arizona	0.20	206.90
Arkansas	190.00	663.83
California	4.63	1,157.52
Colorado	55.44	797.77
Connecticut .....	...	171.29
Delaware .....	...	37.11
Florida	41.08	820.35
Georgia .....	...	626.74
Idaho .....	...	233.18
Illinois	32.74	739.59
Indiana .....	...	189.51
Iowa	43.00	1,084.76
Kansas	17.16	879.44
Kentucky .....	...	400.88
Louisiana	57.88	504.16
Maine	44.91	256.70
Maryland	0.63	97.33
Massachusetts .....	...	285.90
Michigan	5.74	1,172.79
Minnesota .....	...	452.05
Mississippi	6.81	337.75
Missouri	69.83	1,184.99
Montana	2.04	153.04
Nebraska	38.10	419.82
Nevada .....	...	404.57
New Hampshire .....	...	238.54
New Jersey	23.76	261.34
New Mexico .....	...	333.69
New York	18.35	723.78
North Carolina	33.34	400.10
North Dakota .....	...	49.52
Ohio	0.19	291.24
Oklahoma	6.75	724.73
Oregon	20.57	361.28
Pennsylvania	12.87	1,130.62
Rhode Island .....	...	23.09
South Carolina	17.10	358.25
South Dakota .....	...	268.34
Tennessee .....	...	481.00
Texas	62.44	1,493.78
Utah	1.48	395.97
Vermont .....	...	83.41
Virginia	16.50	460.10
Washington	0.75	359.92
West Virginia	2.17	319.77
Wisconsin .....	...	797.44
Wyoming	3.93	131.95
Total	847.78	23,513.50

MILES OF LINES ABANDONED IN THE UNITED STATES SINCE 1916

Year	Miles	Year	Miles
1917	942	1933	1,876
1918	959	1934	1,995
1919	637	1935	1,843
1920	536	1936	1,523
1921	1,626	1937	1,140
1922	677	1938	1,897
1923	513	1939	1,783
1924	693	1940	1,299
1925	606	1941	1,509
1926	457	1942	2,516
1927	282	1943	1,096
1928	512	1944	640
1929	475	1945	412
1930	694	1946	423
1931	795	1947	670
1932	1,452	1948	617
		1949	848

Racor Security RAIL BRACES



**America's
most complete line
of track specialties**

**AUTOMATIC
SWITCH STANDS**

**VERTICAL
SWITCH RODS**

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SWITCH POINTS**

**SWITCH POINT
LOCKS**

RAIL LUBRICATORS

**DEPTH HARDENED
CROSSINGS**

**REVERSIBLE MANGANESE
STEEL CROSSINGS**

**MANGANESE STEEL
GUARD RAILS**



**Figure 3134-A
SECURITY ADJUSTABLE
RAIL BRACE**

For safer, smoother riding on the Milwaukee Road's popular Hiawatha Fleet

Here is a heavy, durable adjustable rail brace that provides maximum support to stock rails and guard rails in high speed and heavy traffic turnouts.

Note the tight fit between under side of rail head and base of rail — large cover plate and specially designed cap nuts that protect bolt threads from corrosion due to brine drippings. Simple time saving design reduces labor cost in installation and subsequent adjustment. No special tools necessary.

Investigate RACOR'S line of Rail Braces. They will assure greater maintenance economies and safer, smoother movement of your traffic.

AMERICAN

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COMPANY

RAMAPO AJAX DIVISION

109 North Wabash Avenue, Chicago 2, Ill.

GENERAL NEWS

1949 Was "Biggest" Year for Air Lines

Reviews issued by civil aeronautics administrator and ATA

Last year was "the biggest the air lines of the United States have ever had," D. W. Rentzel, administrator of the Civil Aeronautics Administration, said in a January 1 statement. And the Air Transport Association came along on January 3 with a review of 1949 which estimated that last year's gross revenues of the scheduled air lines, both domestic and international, were 13 per cent above those of 1948.

The estimate, made by A.T.A.'s director of research, Dr. Lewis G. Sorrell, was based on final reports for 10 months and estimates for November and December.

It put the 1949 gross at \$765,314,865 as compared with 1948's \$678,879,594. The estimate for 1949 operating expenses put them at only 9 per cent higher than the 1948 figure, so the "net operating profit," the A.T.A. statement said, "may increase from the \$16,321,327 . . . in 1948 to a possible \$44,830,248 in 1949."

Administrator Rentzel of C.A.A. indicated his view that facilities provided by the government were an important factor in attracting additional passengers to the air lines in 1949. "Better air navigation and landing aids," he said, had the effect of "promoting greater safety and more schedule regularity." He added that the planes of the carriers "completed more trips due to the increasing use of C.A.A.'s instrument landing system at 87 cities in the U. S., and they invaded successfully a new patronage field by instituting coach service between major cities at reduced fares." Later on in his statement, Mr. Rentzel had this further comment on the "coach" services:

"Whereas emphasis by the scheduled air lines in 1948 was on air freight, throughout 1949 it was on more passengers. Irregular carriers had proved that lower fares and less emphasis on the usual air travel luxuries attract many travelers, and one by one the major air lines entered the coach field. The increased number of passengers carried is attributable largely to this new service, with one air line registering a 30 per cent increase in passengers of which 25 per cent were coach passengers. Other efforts to attain passenger volume included 'family plan' tickets by which members of a traveler's family were

carried for half fare on certain days, special vacation fares and special round-trip rates. The air lines received more mail pay during 1949, but the important change in their situation was their own aggressive programs of selling air travel to people who had never flown before."

Meanwhile, the A.T.A. statement said that the "most conspicuous change" of 1949 "took place in the transport of commodities." It cited Dr. Sorrell's estimate that freight flown by domestic lines last year totaled 95 million ton-miles, an increase of 34.8 per cent above the 1948 figure of 70.7 million ton-miles. The express ton-miles, at 27 million, were off 9.1 per cent from 1948's 29.7 million.

As to the safety of air travel, Administrator Rentzel reported that the combined 1949 fatality rate for U. S. domestic and international air lines was 1 passenger killed per 100 million passenger-miles flown. On that basis, Mr. Rentzel was able to call the rate "the lowest in history." He pointed out, however, that no passenger fatalities occurred on international routes in 1949, while 93 passengers were killed while traveling on the domestic air lines. This made the fatality rate of those lines 1.3, which Mr. Rentzel said was the same as that of 1948.

Expects "Showdown" On Subsidy Issue

Attacks on trucking industry point that way, English says

"The unprecedented attacks made against the trucking industry in 1949, spearheaded by the perennial railroad complaint with respect to 'subsidized competition,' pointed toward a showdown in 1950," Henry F. English, president of American Trucking Associations, said in a year-end statement. He added that there was "reason to hope that the controversies will move out of the realm of unsupported propaganda and into the field of factual data upon which our federal and state legislatures may base sound and equitable policies."

The prospective "showdown," Mr. English suggested, "may determine the future course of transportation generally in the United States." He predicted that "the new year virtually is certain to see thorough discussion in Congress of current federal activities and policies in the field of transportation."

The prediction was based on such developments as the submission by Secretary of Commerce Sawyer of his transportation report to President Truman, and the transport inquiry being conducted by the Senate committee on interstate and foreign commerce. These developments "to a great extent . . . have grown out of the continual complaints and charges of the railroads against competing modes of transportation," Mr. English continued, adding, however, that "the trucking industry views them as an opportunity."

"Similar activity in the past," he went on, "has served to show that most of the charges are groundless; that the real trouble with the railroads is internal, and that real remedies have been prescribed repeatedly by the experts over a long period of years and just as consistently ignored by the railroads."

Meanwhile, the A.T.A. president reported that 1949, for the trucking industry, was the "biggest year in its history." He cited reports to the Interstate Commerce Commission which indicated that intercity traffic handled by Class I for-hire motor carriers was 5 per cent greater last year than in 1948. The gross revenues of those carriers were up 11 per cent, but their expenses increased 13 per cent. Thus there was a drop of 14 per cent in their net revenues.

See First-Quarter Loadings 2.3 Per Cent Above 1949

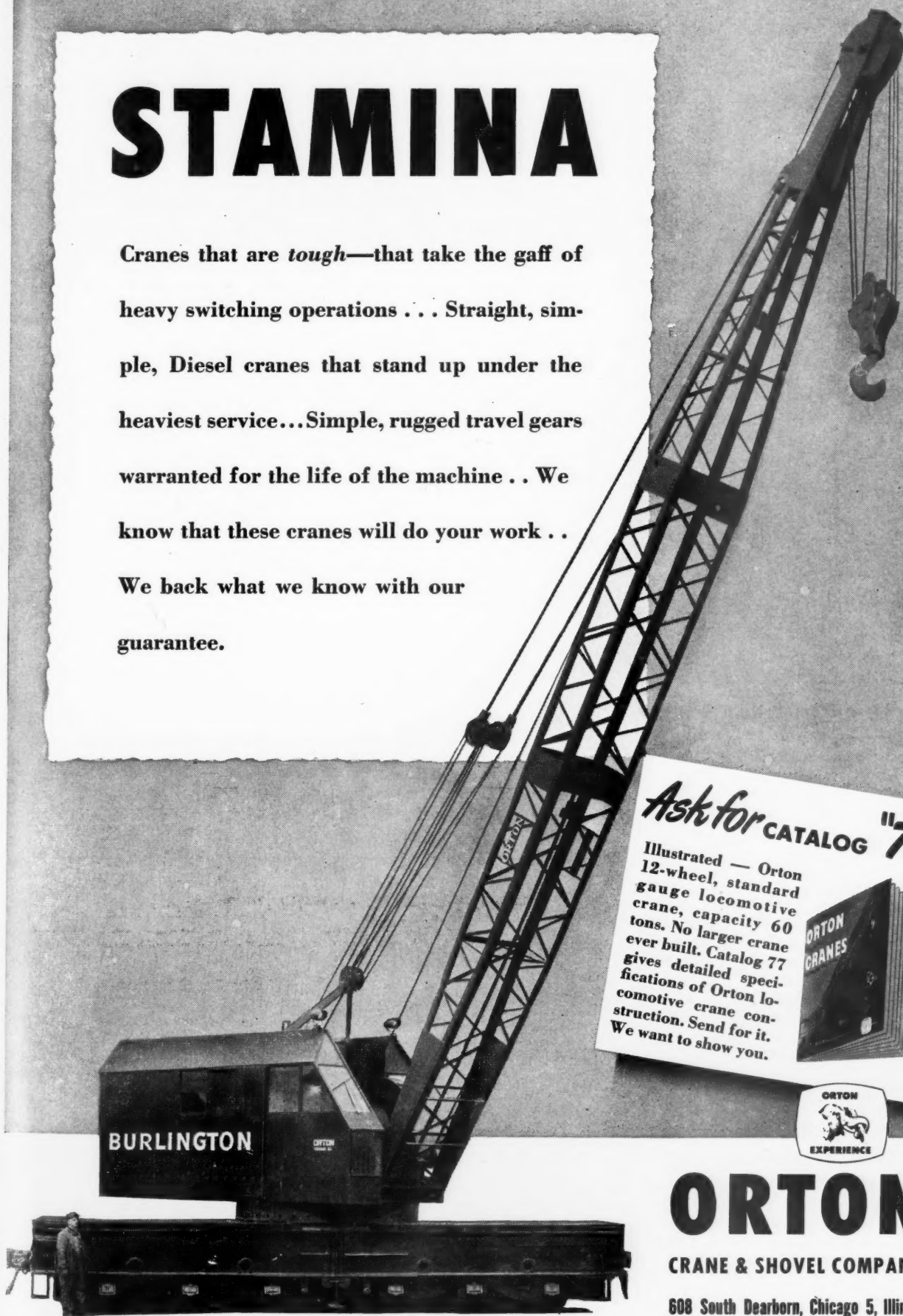
Freight car loadings in the first quarter of 1950 are expected to be 2.3 per cent above those in the same period in 1949, according to estimates of the 13 regional Shippers Advisory Boards. On the basis of those estimates, loadings of the 32 principal commodity groups will be 6,770,603 cars in the first quarter in 1950, compared with 6,617,580 actual car loadings for the same commodities in the corresponding period of 1949. Seven boards estimated an increase and 6 estimated a decrease in loadings.

The tabulation shows actual loadings for each district in the first quarter of 1949, estimated loadings for the first quarter of 1950, and percentage of change.

The 13 boards expect an increase in the first quarter of 1950, compared with the same period one year ago, in loading of 14 and a decrease of 18 of the commodities listed. Among those showing the greatest increase are: Frozen foods, fruits and vegetables, 20.7 per cent; coal and coke, 11 per cent; vehicle parts, 7.9 per cent; lumber and forest products, 6.6 per cent; salt, 6.3 per cent; automobiles and trucks, 5.6 per

STAMINA

Cranes that are *tough*—that take the gaff of heavy switching operations . . . Straight, simple, Diesel cranes that stand up under the heaviest service...Simple, rugged travel gears warranted for the life of the machine . . We know that these cranes will do your work . . We back what we know with our guarantee.



Ask for CATALOG "77"

Illustrated — Orton 12-wheel, standard gauge locomotive crane, capacity 60 tons. No larger crane ever built. Catalog 77 gives detailed specifications of Orton locomotive crane construction. Send for it. We want to show you.



ORTON

CRANE & SHOVEL COMPANY

608 South Dearborn, Chicago 5, Illinois

Shippers Advisory Boards	Actual Loadings First Quarter 1949	Estimated Loadings First Quarter 1950	Per Cent Increase
New England	137,381	133,035	3.2 dec.
Atlantic States	703,178	788,013	12.1
Allegheny	959,853	999,278	4.1
Ohio Valley	831,783	854,621	2.7
Southeast	904,232	900,626	0.4 dec.
Great Lakes	443,675	450,576	1.6
Central Western	260,459	254,354	2.3 dec.
Mid-West	836,941	854,592	2.1
Northwest	250,720	248,019	1.1 dec.
Trans-Missouri-Kansas	356,438	350,781	1.6 dec.
Southwest	468,174	437,311	6.6 dec.
Pacific Coast	284,733	293,983	3.2
Pacific Northwest	180,013	205,414	14.1
TOTAL	6,617,580	6,770,603	2.3

cent; fresh fruits other than citrus fruits, 5.4 per cent; cement, 3 per cent; livestock, 2.9 per cent; paper, paper-board and prepared roofing, 2.3 per cent; sugar, syrup, and molasses, 1.8 per cent, and flour, meal and other mill products, 1.1 per cent.

Commodities for which decreases are estimated include: Hay, straw and alfalfa, 22.3 per cent; cottonseed, soybean-vegetable cake and meal, except oil, 16 per cent; potatoes, 10.3 per cent; machinery and boilers, 9.5 per cent; poultry and dairy products 8.5 per cent; ore and concentrates, 8.1 per cent; iron and steel, 5.9 per cent; brick and clay products, 5 per cent; gravel, sand and stone, 4.5 per cent; grain, 4.4 per cent; cotton, 4.2 per cent; petroleum and petroleum products, 3.6 per cent, and chemicals and explosives, 3.5 per cent.

Diesel-Locomotive "Team" Coming Here from Britain

Fourteen representatives of Great Britain's Diesel locomotive industry, a "productivity team," are scheduled to arrive in this country on January 9 to begin studies of the American manufacturers'

"know how." This was announced by the Economic Cooperation Administration which explained that the "team" is like others representing various British industries and sponsored jointly by E.C.A., the British government and the Anglo-American Council on Productivity.

The Diesel locomotive team's "leader" is Colonel Ian Arthur Marriott of W. G. Bagnall, Limited, and its secretary is Arthur Ross Robertson, representing the Locomotive Manufacturers' Association of Great Britain. For purposes of their American studies, members of the "team" will be divided into three groups as follows: Supervisory, technical, and workshop.

Makes Rules to Curb Trading In Motor Operating Rights

To curb "so-called trading in operating rights for profit," the Interstate Commerce Commission has revised its rules and regulations governing the transfer of motor-carrier operating rights. The revision, effective January 31, 1950, was promulgated by the commission's Division 5 in an order dated December 12.

It adds to the present rules a provision stipulating that a proposed transfer of

operating rights "will not be approved if the commission finds that the transferee does not intend to, or would not, engage in bona fide motor carrier operations under such operating rights, or if the commission finds that the transferor acquired such operating rights for the purpose of profiting therefrom and has not engaged in bona fide motor carrier operations under such operating rights."

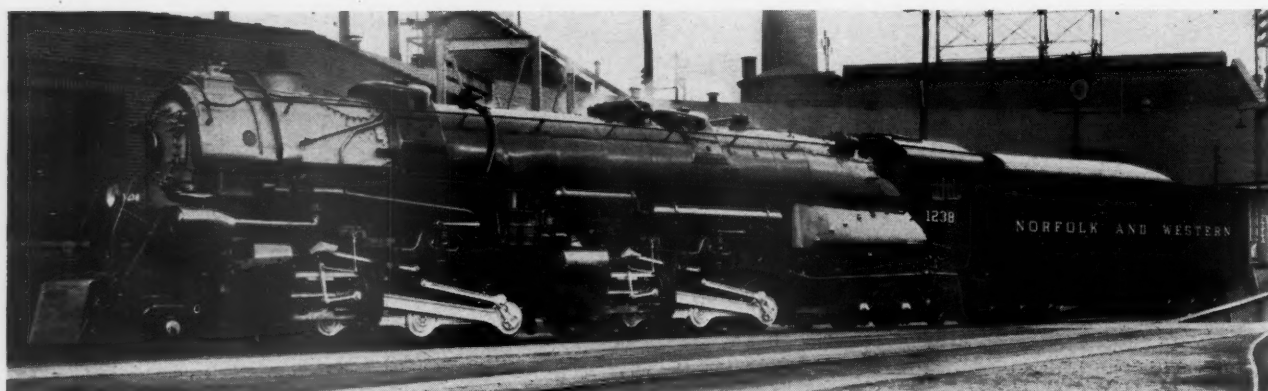
Effective Date of Rail-Barge Differentials Again Set Back

The Interstate Commerce Commission has further postponed, from January 31, 1950, until March 31, 1950, the effective date of its order requiring railroads and water carriers on inland waterways to establish through routes and joint rail-water rates reflecting differentials under all-rail rates. The postponement, announced in a December 20 order, was the third granted by the commission since the railroads filed an appeal in the federal district court at Chicago.

Aitchison Can Serve on I.C.C. Until Successor Is Appointed

President Truman on December 22 issued an executive order further exempting Interstate Commerce Commissioner Clyde B. Aitchison from the civil-service rule requiring government employees to retire at the age of 70. The order, issued in anticipation of the expiration of Mr. Aitchison's term on December 31, will permit him to serve "until his successor in office is appointed and shall have qualified."

Mr. Aitchison, who is in his 75th year, is the senior member of the commission, on which he has served continuously since September, 1917. He has been serving since 1946 under a previous Presidential order which granted him ex-



This articulated Norfolk & Western locomotive, just turned out of the railway's Roanoke, Va., shops, is said to be the first of its type in the country to be equipped with roller bearings on main and side rod connections, and lightweight reciprocating parts. Fourth of an order of five now under construction, the locomotive has roller bearings on crank and wrist pins of main rods and crank pins of side rods. Weight of reciprocating parts is 38 per cent less than on the conventional locomotive. Claimed advantages of the improvements are greater reliability, increased availability, lower roundhouse maintenance cost, reduction in hammer blow on rails and longer runs without lubrication. The engine is capable of sustained speeds in excess of 70 m.p.h. and has a maximum drawbar horsepower of 6,300 at 45 m.p.h. It burns approximately 7 tons of coal an hour at maximum performance. It will be used to supplement the N. & W.'s fleet of coal-burning steam locomotives for handling merchandise freight trains and heavy passenger trains over all grade districts, and heavy tonnage freight trains over lighter grade districts.



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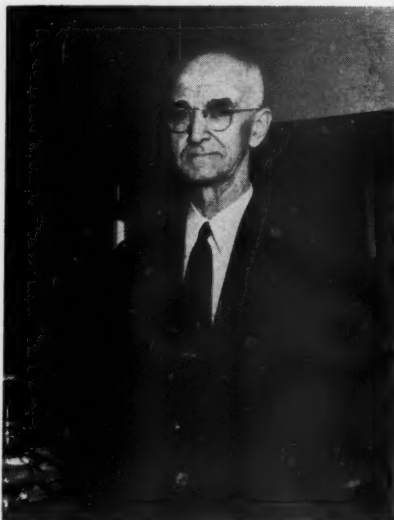
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"THE CHRISTMAS SPIRIT ON A YEAR-ROUND BASIS"

Leslie Gould, financial editor of the New York Journal-American, has cited two persons of his acquaintance who best exemplify "the Christmas spirit on a year-round basis." One of them is Ed Hutton, wealthy stock broker.

"The other fellow," says Mr. Gould, "is Christopher Cox—the steward on the dining car of the small Reading Railroad's steamliner operating between New York and Philadelphia. Coxe, as he is known to the hundreds who commute with him, also is an individualist. He does more than just run a dining car. He makes it his job to see that the passengers enjoy their trip and leave his car in good humor, and that is something on a morning New York commuting train.

"Cox is a bachelor who served in the Boer War and in many other parts of the British Empire before he became a steward.



At Christmas time, he decorates his car with colored streamers, tinsel and bells and throws a party one night. He has so won the affection of his daily commuters, that some of those who come from Philadelphia make a special trip out to join him in the celebration. Every Christmas he adds some little touch, this time it is music—old-time records played on a portable phonograph.

"If there were more Coxes and Ed Huttons, this would not be such a bad world to live in. They help."

The editorial staff of *Railway Age*, who rode with Mr. Cox frequently during the many years that this paper was printed in Philadelphia, can add their testimony to Mr. Gould's in praise of Steward Cox's extraordinary qualities in endearing himself to his customers.

emption from the compulsory-retirement rule until the end of his present term. The December 22 order qualified him to remain on the job pursuant to those provisions of the Interstate Commerce Act which stipulate that a commissioner whose term has expired shall continue to serve until his successor is appointed and shall have qualified.

Commissioner Richard F. Mitchell is also now serving under those same provisions of the act, since his term, too, expired December 31. Mr. Mitchell, however, required no exemption from the retirement rule. He is 60 years of age and has been a member of the commission since January, 1947, when he was appointed by President Truman for the unexpired term of the late Claude R. Porter.

New Mail-Pay Plea Raises Proposed Increase to 95%

The railroads have filed with the Interstate Commerce Commission a supplemental mail-pay petition, raising from 80 to 95 per cent the permanent increases in those rates which are sought in the pending proceeding. The 95 per cent advance would be added to the rates in effect February 18, 1947, and would result in something like a 56 per cent increase in present rates which include the interim increase of 25 per cent that became effective February 1, 1948, and was retroactive to February 19, 1947, the date on which the railroads' original petition was filed.

The proceeding is No. 9200, and the February 19, 1947, petition sought permanent increases of 45 per cent. Previous amendments to this original petition raised the proposed increases first to 65 per cent and then to 80 per cent, which was the carriers' permanent proposal until the present 95-per-cent petition was filed. The new proposal is based on further increases in operating costs

which have occurred since the 80-per-cent petition was filed. Meanwhile, the commission also has before it a March 31, 1949, motion whereby the railroads are seeking to have the interim increase raised from 25 to 60 per cent.

Safety Act Requires that Cars "Remain Coupled," Court Rules

In requiring that railroad cars be equipped with couplers "coupling automatically and which can be uncoupled without the necessity of men going between the ends of the cars," the Safety Appliance Act also requires by implication that the couplers keep the joined cars together "in the meantime." The United States Supreme Court has so ruled in a decision holding that a trial court erred in failing to instruct a jury that the breaking of a car coupler in a switching operation was a violation of the act which automatically made the railroad liable.

The case was *O'Donnell v. Elgin, Joliet & Eastern Railway Company*, and the Supreme Court's 4-to-2 decision of December 12 was announced by Justice Jackson. Justice Burton filed the dissenting opinion to which Justice Reed subscribed, while Justices Frankfurter, Douglas and Minton took no part in the court's consideration of the case. The dissenters did not agree with the majority's determination that the Safety Appliance Act's coupler provisions must be read as implying a "mandatory" requirement that the cars "remain coupled until set free . . ."

The majority opinion found the Court of Appeals for the Seventh Circuit to have been in error in upholding the trial court. The Court of Appeals had said it did not believe the Safety Appliance Act "requires defendant to furnish couplers that would not break," and the trial judge was correct in refusing

to instruct the jury that "breaking of a coupler in and of itself was negligence per se."

Facts at Issue

The case began as a result of the "unwitnessed death" of a member of a yard switching crew, William O'Donnell. He allegedly was killed while trying to adjust couplers on cars that previously had failed to couple by impact. While at work on these cars, two other cars broke loose from a cut in a switching operation, and rammed the standing cars which decedent had said he was going to adjust. His "mangled body" later was found lying across one rail of the track "on which the cars he had intended to prepare for coupling had stood."

Action was brought under the Federal Employers' Liability Act, charging general negligence on the part of the railroad and also making a specific charge that the road "carelessly and negligently" violated the Safety Appliance Act "by operating a car not equipped with the prescribed coupler." When the trial court jury found for the defendant, and was upheld in the Court of Appeals, the Supreme Court accepted the case with the statement that "this result must stand if the jury were properly instructed." The high court then limited itself to the claim based on the Safety Appliance Act, saying as it did so that "it is almost indispensable to an intelligible charge to the jury that a clear separation of the two kinds of actions be observed and impressed."

Examining the wording of the Safety Appliance Act, the court noted that there are two specific requirements as to couplers, i.e., that they couple automatically by impact, and that they uncouple without requiring men to go between the ends of the cars. It then pro-

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ceeded to read in the "remain coupled" requirement on the basis of this reasoning:

"We find it difficult to read the Safety Appliance Act to require that cars be equipped with appliances which couple automatically by impact and which may be released without going between the ends of cars, but which need not remain coupled in the meantime. The act so construed would guard against dangers incident to effecting an engagement or disengagement while ignoring the even greater hazards which can result from the failure of a coupling to perform its main function, which is to stay coupled until released. We hold that the . . . act requires couplers which, after a secure coupling is effected, will remain coupled until set free by some purposeful act of control."

Similar Case in Florida

Thus the court found the case to be one of those wherein "a failure of equipment to perform as required by the Safety Appliance Act is in itself an actionable wrong. . . for the proximate results of which there is a liability—a liability that cannot be escaped by proof of care or diligence." It then proceeded to reverse the lower courts by ruling the plaintiff was entitled to an instruction to the jury which said that equipping a car with a coupler that broke in a switching operation was a violation of the Safety Appliance Act, making the railroad liable, and "neither evidence of negligence nor of diligence and care were to be considered on the question of this liability."

A December 19 opinion of the Su-

preme Court passed upon a similar case, sending it back to the United States District Court for the Middle District of Alabama where the trial judge had instructed the jury that, under the circumstances, there could be no liability based on violation of the Safety Appliance Act. This was the case of *Carter v. Atlanta & St. Andrews Bay Railway Company*, and the court's ruling was announced in an opinion by Justice Clark with the dissent of Justice Reed noted. Justice Douglas took no part in the case, while Justice Frankfurter filed a separate opinion, expressing his view that, because "no general principle is here involved," the court should have dismissed, "as improvidently granted," the writ whereby it agreed to hear the appeal.

The case involved the suit of Neroy Carter, who was injured February 2, 1946, while acting as "swing brakeman" of an A.&St.A.B. switching crew. The crew was performing night switching operations at the Panama City, Fla., plant of the International Paper Company; and their engine was engaged in backing a cut of nine cars onto the main line in order to couple, at the end of the cut, a wood-rack car loaded with pulpwood. Mr. Carter was giving signals for the coupling operation. The engineman hit the wood-rack car "in the usual manner necessary for coupling," but instead of coupling to the cut it started rolling down the tracks. Mr. Carter overtook it, climbed aboard, and stopped it with the hand brake.

Meanwhile, the engine with its cut of 9 cars had not been stopped; and it hit the wood-rack car "so violently" that it threw Mr. Carter down into the hold of that car. "This time," the Supreme Court continued, "the coupling was successful, and as the car jerked from the impact some of the pulpwood . . . pitched forward on the petitioner, causing the alleged injuries."

The railroad moved for a directed verdict as to the alleged violation of the Safety Appliance Act on the ground that while the coupler failed to couple on the initial impact, "it worked previously and worked subsequently, and the proof shows no defect in it." The trial judge granted the motion and instructed the jury accordingly, so the jury received the case only on the allegations of negligence under Federal Employers Liability Act. It found for the railroad. The verdict was affirmed by the Circuit Court of Appeals for the Fifth Circuit, and the plaintiff's appeal from that determination brought the case to the Supreme Court.

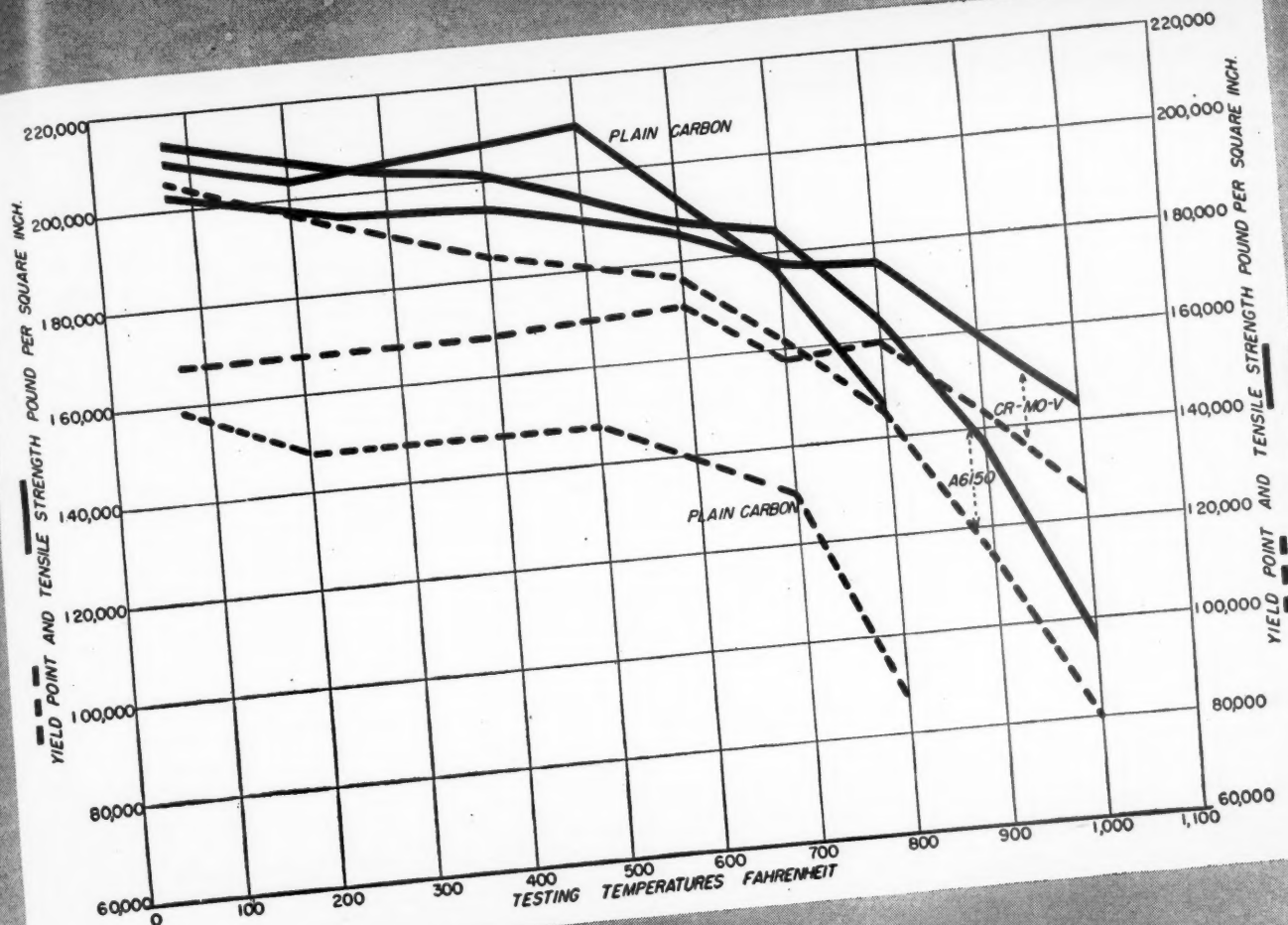
The latter's opinion, citing the O'Donnell case, noted above, said the "the absence of a 'defect' cannot aid the railroad if the coupler was properly set and failed to couple on the occasion in question. The fact that the coupler functioned properly on other occasions is immaterial." As to the railroad's contention that "when the car came to rest after the failure of the coupler 'its capacity for doing harm was spent,'" and thus "the second movement, in which the coupling worked perfectly, started a new chain of events resulting in Carter's injury," the court had this to say:

"We cannot agree that the various events were so divisible. This was a two-pronged complaint, alleging the right to recover under the Safety Appliance Act and the Federal Employers' Liability Act. In this situation the test of casual relation stated in the Employers' Liability Act is applicable, the violation of the Appliance Act supplying the wrongful act necessary to ground liability under F.E.L.A. . . . Once the violation is established, only casual relation is in issue. . . . Certainly there was evidence upon which a jury could find a casual relation between the failure to couple, the action of petitioner in running and stopping the rolling car, the engineer's justified assumption that the car had coupled when in fact it had failed to do so, and the continued movement of the train into the standing car, thus causing injury. . . . It was error to take this phase of the case from the jury."

The Supreme Court also found "error" in the failure of the trial judge to point up in his charge to the jury the fact that "contributory negligence" on the part of an injured employee does not bar recovery under the Liability Act. That is stated specifically in the act, which goes on to say, however, that "the damages shall be diminished by the jury in proportion to the amount of negligence attributable to such employee."



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I.C. Commissioner Miller Dies

Interstate Commerce Commissioner Carroll Miller, whose death at Washington, D. C., was reported in the *Railway Age* of December 31, had been a member of the commission for 16½ years—since June, 1933, when he was appointed by the late President Roosevelt. He was commission chairman during the year 1937. At the time of his death, he was serving his third consecutive term, for which he was reappointed by President Truman early in 1947, and which will expire December 31, 1953. In June, 1948, President Truman issued an executive order exempting Mr. Miller from the civil-service rule requiring government employees to retire at 70 years of age if they have had 15 years of service. Mr. Miller's widow, Mrs. Emma Guffey Miller, is prominent in the Democratic party, and is a sister of former Senator Guffey of Pennsylvania.

Mr. Miller was born in Richmond, Va., March 18, 1875, and was graduated from Stevens Institute of Technology in 1896 with an M. E. degree. Thereafter he was employed for about a year by the Illinois Steel Company. The following year he



Carroll Miller

was in England as an erecting engineer for Humphreys & Glasgow of London. Mr. Miller returned to this country in 1898 to become associated with the United Gas Improvement Company, remaining with that company until 1901. During the 1901-1907 period he was a consulting engineer at Chicago, in which capacity he made several trips to Japan, where he supervised the building and establishment of a gas company at Osaka.

In 1907, Mr. Miller transferred his headquarters to Pittsburgh, Pa., where he continued his practice as a consulting engineer until 1909, when he became chief engineer of the Providence (R. I.) Gas Company. He remained in that position until 1914, meanwhile continuing his consulting work which included a European trip to investigate gas and chemical processes in Germany, France and England. During the 1914-1918 period, Mr. Miller was general manager of the Western United Gas & Electric Co. of Aurora, Ill., and thereafter served for

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*Richmond 19 — 10 S. 6th St.
Richmond 7-3491 • E. C. Toms
L. E. Walker
*Roanoke 5 — 601 Salem Ave.
Roanoke 3-3615 • W. E. James

WASHINGTON

*Seattle 4 — King & Occidental Sts.
Main 4635 • E. E. McEachron
*Spokane 8 — 152 South Post St.
Riverside 3151 • W. A. Sparks
*Tacoma 1 — 2112 A Street
Main 0166 • R. J. Franzen

WEST VIRGINIA

Charleston —
600 Chamber of Commerce Building
Charleston 3-9423 • John T. Young

WISCONSIN

Milwaukee 2 — 180 No. Jefferson St.
Marquette 8-1946 • R. J. Harkins

about a year as general manager of the Philadelphia Company of Pittsburgh. During the 1919-1921 period he was vice-president of the Guffey Gillespie Oil Company; and he then became associated with the Thermatomic Corporation and Thermatomic Carbon Company, serving both as vice-president during the 1921-1928 period and as president during the 1928-1932 period. While holding these various positions, Mr. Miller also carried on his practice as a consulting engineer.

Freight Car Loadings

Freight car loadings for the week ended December 31 were not available as this issue of *Railway Age* went to press.

Loadings of revenue freight for the week ended December 24 totaled 623,303 cars, and the summary for that week as compiled by the Car Service Division, Association of American Railroads, follows:

REVENUE FREIGHT CAR LOADINGS			
For the week ended Saturday, December 24			
District	1949	1948	1947
Eastern	115,752	116,305	113,131
Allegheny ..	129,680	128,496	131,115
Pocahontas ..	47,584	46,418	35,160
Southern ..	111,001	103,031	95,828
Northwestern ..	67,369	64,586	67,455
Central Western ..	97,383	95,675	104,485
Southwestern ..	54,534	54,188	52,180
Total Western Districts ..	219,286	214,449	224,120
Total All Roads	623,303	608,699	599,354
Commodities:			
Grain and grain products	39,982	37,722	35,611
Livestock	7,965	7,445	7,129
Coal	133,983	133,160	124,630
Coke	11,987	13,670	14,338
Forest products	36,722	31,941	28,950
Ore	12,268	11,279	11,859
Merchandise l.c.l.	77,098	75,716	86,303
Miscellaneous	303,298	297,766	290,534
December 24	623,303	608,699	599,354
December 17	639,723	754,552	832,130
December 10	668,825	782,913	854,159
December 3	693,923	804,172	878,588
November 26	664,555	722,936	792,331

Cumulative total
51 weeks 35,414,107 42,134,218 43,814,760

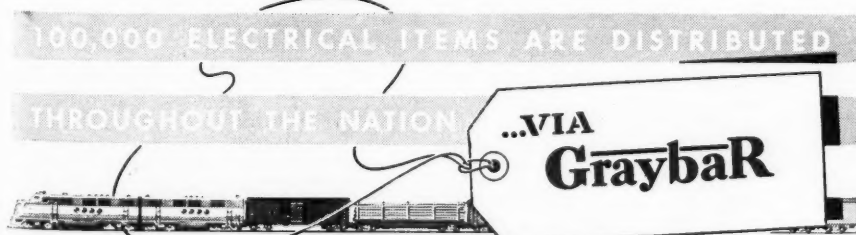
In Canada.—Car loadings for the week ended December 17 totaled 72,123 cars, as compared with 75,286 cars for the previous week and 73,293 cars for the corresponding week of 1948, according to the compilation of the Dominion Bureau of Statistics. Loadings for the week ended December 24, according to the same source, totaled 65,314 cars, compared with 59,698 cars in the week ended December 25, 1948.

	Revenue Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada:		
December 17, 1949	72,123	30,760
December 18, 1948	73,293	33,779
December 24, 1949	65,314	29,216
December 25, 1948	59,698	29,511
Cumulative totals for Canada:		
December 24, 1949	3,857,579	1,572,546
December 25, 1948	3,986,037	1,762,758

Some Roads Getting Fuel Coal Under I.C.C. Service Order

Some railroads have been calling upon the Interstate Commerce Commission for assistance in obtaining locomotive fuel coal under the provisions of the commission's Service Order No. 844 which gives the carriers first call on coal pro-

*At these warehouses, there are Graybar Representatives who have special experience in handling railroad electrical requirements.

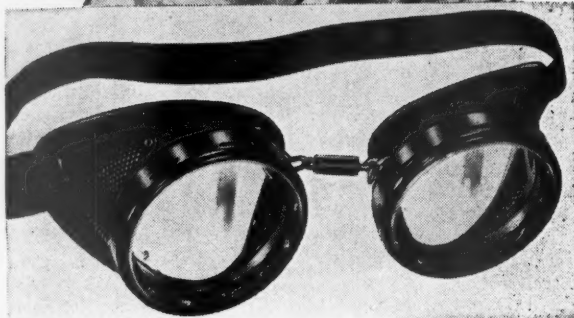


He didn't forget...

He just took a chance!

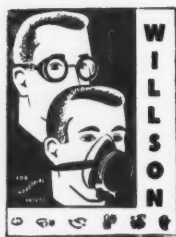


When workers risk their eyes, with disastrous results to both themselves and the company alike, it's time to look into the cause of unsafe practices.



Goggle Style TAW51

WILLSON answers the problem of getting safety equipment worn by designing the utmost comfort into their entire line of eye and respiratory protective devices. The goggles illustrated have eyecups that are molded to fit the bony structure around the eyes. The chain bridge and elastic headband are adjustable for comfortable fit. And the Super-Tough* lenses meet or exceed Federal Specifications for optical clarity as well as impact resistance.



NEW CATALOG

In addition to product information, it contains information on safety glass, filter glass, respiratory hazards, etc., which will help you select proper safety equipment to meet specific hazards. Send for it!

*U. M. Reg. U. S. Pat. Office



WILLSON PRODUCTS, INC., 241 WASHINGTON STREET, READING, PENNA.



duced by their usual suppliers. (See *Railway Age* of December 31, 1949, page 46.)

The first road to file a certification of its need for assistance was the Georgia & Florida, and other certifications then came from the Central of New Jersey and the Peoria & Pekin Union. Upon receipt of the certifications, Director Homer C. King of the commission's Bureau of Service issued directives calling upon roads serving the mines involved to supply to such mines no cars except those required for loading fuel coal to the needy roads. Under terms of the order this priority for the needy roads continues until the mines are supplying them fuel in weekly quantities equal to the average quantities which were supplied weekly during the period from November 14 to December 12, 1949.

Retire from I.C.C. Service

Four Interstate Commerce Commission examiners retired voluntarily from the commission's service on December 30, 1949. They are G. Heard Mattingly, Eugene H. Waters, David T. Copenhafer, and William H. Shields.

ORGANIZATIONS

The 38th annual dinner of the **Traffic Club of Philadelphia** will be held on January 17, 1950, at the Benjamin Franklin Hotel. John D. Gill, economist, will be guest speaker.

The next meeting of the **Eastern Car Foreman's Association** will be held in the Engineering Societies building, 29 West 39th street, New York, on January 13, at 8 p.m. P. J. Hogan, supervisor of car inspection and maintenance of the New York, New Haven & Hartford, at New Haven, Conn., will present a paper on "Derailments and Their Causes."

The next regular meeting of the **Women's Traffic Club of New York** will be held at the Park Sheraton Hotel, 55th street and 7th avenue, at 6:30 p.m., January 10. The speaker will be Charles E. Blackford, III, of the Peoples Trust Company, Hackensack, N. J.

The **American Standards Association** has elected three new members to its board of directors, for terms of three years. Maurice Stanley, chairman of the board of the Fafnir Bearing Company, represents the Anti-Friction Bearing Manufacturers Association; B. S. Voorhees, vice-president of the New York Central, represents the Association of American Railroads; and Colonel J. G. Vincent, vice-president, Packard Motor Car Company, represents the Automobile Manufacturers Association.

The transportation outlook for 1950 will highlight discussions at the annual meeting of the **Atlantic States Shippers**

Advisory Board at the Benjamin Franklin Hotel in Philadelphia, Pa., on January 12. Richard P. Brown, vice-president and director of the Minneapolis-Honeywell Regulator Company, will be the speaker at a luncheon sponsored jointly by the shipper organization and the Traffic Club of Philadelphia. R. W. Brown, president of the Reading, will be toastmaster.

The business meeting of the board will include an address on national transportation conditions by Arthur H. Gass, chairman of the Car Service Division, Association of American Railroads; reports of committees, and election of officers. H. H. Pratt, president of the board and general traffic manager of the Crucible Steel Company of America, will preside. Six committees of the board will meet at the Benjamin Franklin Hotel on Wednesday, January 11.

EQUIPMENT AND SUPPLIES

Monthly Equipment Summary

Locomotive and car orders reported by *Railway Age* in December are not summarized here this month because of the complete listing, elsewhere in this issue, of all equipment orders placed during 1949. The monthly summary of equipment orders reported will be resumed in the issue of February 4.

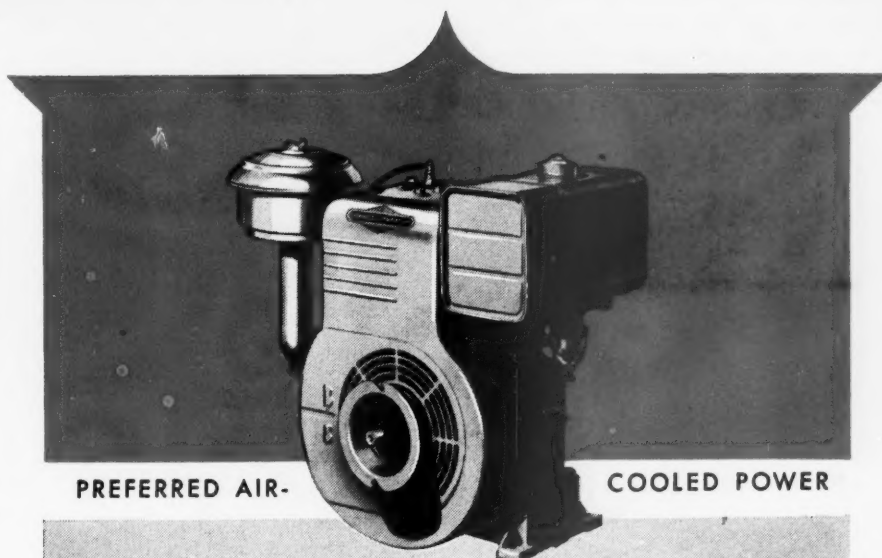
FREIGHT CARS

The Lehigh & New England has ordered 35 70-ton covered hopper cars from the Bethlehem Steel Company for delivery in March. The inquiry for this equipment was reported in the *Railway Age* for December 10.

SUPPLY TRADE

J. J. Davis, Jr., manager of sales, railroad division, Inland Steel Company, Chicago, has assumed also the responsibility for pig iron and chemical sales. A. C. Engh has been appointed manager of the pig iron and chemical section of the consolidated sales units.

Edwin B. Fairbanks, commercial engineer and superintendent of construction of the General Railway Signal Company, with headquarters at Rochester, N. Y., retired on January 1, 1950, after 45 years' service. He is succeeded by George J. Johaneck, assistant commercial engineer, with headquarters at Rochester. Mr. Fairbanks was born on October 31, 1880, and received his early education in New Jersey schools. He entered railroad service in the signal depart-



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Let the Briggs & Stratton trademark be your guide to all that is best in 4-cycle, single-cylinder air-cooled gasoline engine performance.

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AGILE and FAST...

for easy handling in tight spots!



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—another Towmotor efficiency feature

A lift truck travels in reverse 50% of the time. That's why Towmotor has 2 speeds forward, 2 speeds reverse—offering fast travel in both directions.

Ask to see the New Towmotor Movie, "The One Man Gang," right in your office.

Towmotor rear wheel steering—*opposite* the load—provides fast and easy maneuverability under all conditions. Designed for sharp angle turns, Towmotor steering mechanism permits rapid travel in and out of box cars, highway trucks, narrow aisles and doors, cutting mass handling time and costs. Compare Towmotor with any other fork lift truck and you will see why Towmotor engineered features make every Mass Handling job easier, faster, safer. 10 models plus standard and specially designed accessories handle loads from 1500 to 15,000 lbs.—a Towmotor for *every* job. Write for a copy of the "Operators Guide." Towmotor Corporation, Division 21, 1226 E. 152nd St., Cleveland 10, Ohio. Representatives in all Principal Cities in U. S. and Canada.

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ment of the Delaware, Lackawanna & Western in 1898, leaving in 1901 to go with the Erie. After four years in the Erie's signal department, Mr. Fairbanks joined General Railway Signal as general foreman of construction and in 1921 was appointed superintendent of construction. In 1937 he was appointed commercial engineer and superintendent of construction, which positions he held until his retirement.



Edwin B. Fairbanks

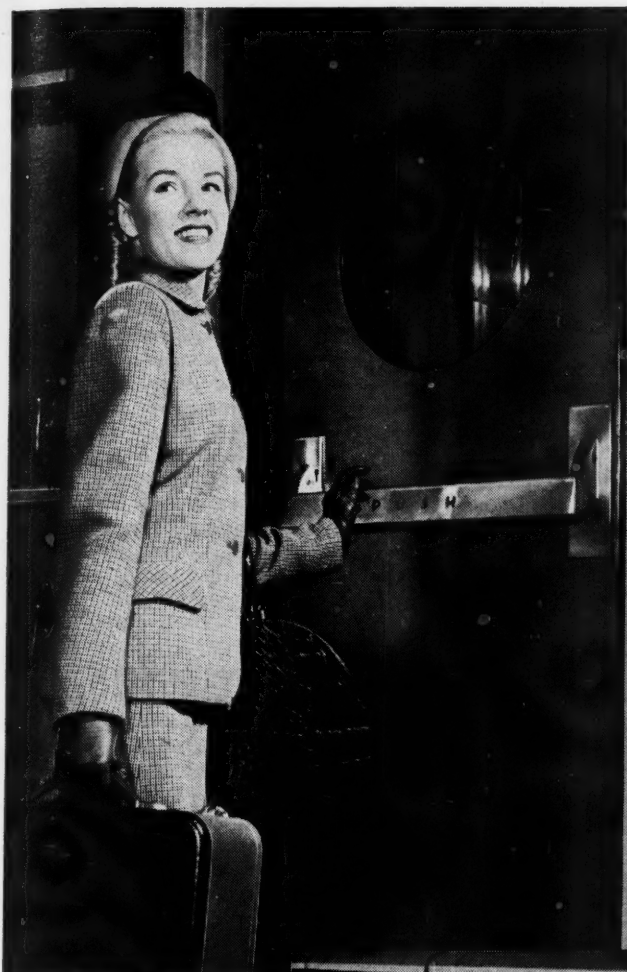
Mr. Johanek was born at Shawano, Wis., on March 9, 1907, and educated in grade and high school there. Later he studied at the Chicago School of Engineering and the Armour Institute of Technology. He began his railroad experience in 1925 as signal helper and assistant maintainer on the Chicago & North Western. In 1927 he entered the



George J. Johanek

service of the Chicago, Burlington & Quincy as draftsman, which post he held until 1929, when he resigned to become an engineer in the commercial department of General Railway Signal. In 1937 he was transferred to the company's Chicago office as sales engineer, returning to the main office in Rochester in 1942. In 1947 he was made assistant commercial engineer.

Walter E. McArthur, heretofore eastern regional manager of the Nelson



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REMODELED COACHES
too...

NP *Automatic*
end door operators



Current modernization programs call for remodeling of passenger equipment to meet public demand for the newest in comfort and convenience. Outstanding examples are the B & O's latest remodeled coaches, shown above. Rebuilt from virtually the trucks up, these cars feature modern seating, lighting, and window design. Based on their experience with NP Automatic End Door Operators on new passenger-car equipment, the B & O has installed the "Magic Touch" on end doors of these coaches.

Right out where passengers can use and appreciate them, NP Automatic End Door Operators are "naturals" for contributing the modern *touch* to remodeled coaches. For this modern method of end door control has earned the approval of railroad men and traveling public alike.

Railroad officials know that passengers appreciate doors that open automatically at the lightest touch, then close gently and safely. They know, too, that operating and maintenance personnel approve the sturdy

simplicity of the compact door-control mechanism... and its reliable, trouble-free performance. For today NP Automatic End Door Operators are featured attractions and proven performers on famous trains of the country's leading railroads.

When planning your modernization program, investigate the advantages of these End Door Operators. Adaptable to swinging or sliding doors, on either new or remodeled coaches, they are backed by the full manufacturing and service facilities of the National Pneumatic Company, for nearly fifty years the outstanding leader in door control equipment. *Complete information is contained in our Publication No. 1063.*

7362

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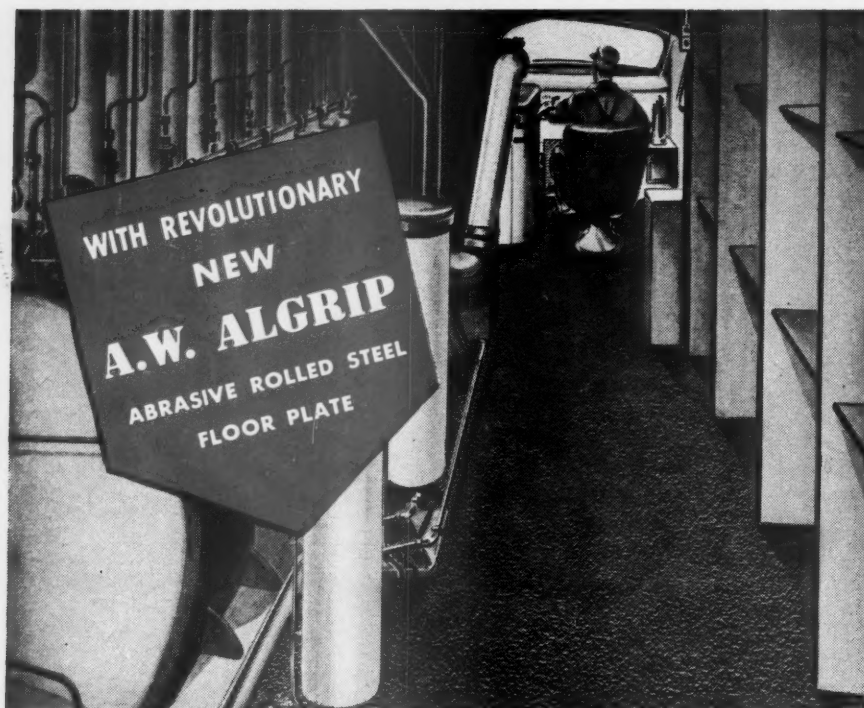
McCormick Bldg., Chicago

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Represented in Canada by Railway & Power Engineering Corp., Ltd., Toronto

WORLD'S LARGEST MANUFACTURER OF DOOR CONTROL EQUIPMENT

NOW RAILROADS CAN END COSTLY SLIPPING ACCIDENTS PERMANENTLY



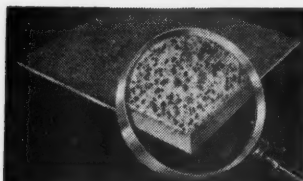
Non-Slip Even on Steep Inclines

Now, for the first time, Railroads can protect both passengers and employees from dangerous slipping accidents with A.W. ALGRIP ABRASIVE Rolled Steel Floor Plate.

A.W. ALGRIP is made by rolling abrasive grain, the same type used in grinding wheels, as an integral part of the upper portion of steel floor plate. Wet or dry, A.W. ALGRIP prevents slipping, even on steep inclines. It retains its non-slip qualities for a lifetime because as the surface wears new abrasive particles are constantly exposed.

A.W. ALGRIP is ideal for installation on freight and passenger platforms, ramps, walkways, bridges, catwalks, signal towers and on rolling stock. A.W. ALGRIP, unlike other abrasive flooring, is light in weight but high in strength. It stands severe abuse without cracking and is not damaged by heat, fire or heavy traffic.

Write or use Coupon for Complete information and 8-page descriptive booklet today.



Even distribution of Abrasive Particles shown by magnifying glass.



Guards against slipping on railroad platforms and trapdoors.

NEW



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A Product of ALAN WOOD STEEL COMPANY

CONSHOHOCKEN CO., PA.

Gentlemen: Please rush me complete information and a FREE copy of your 8 page A.W. ALGRIP BOOKLET.

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Other Products: PERMACLAD Stainless Clad Steel • A.W. SUPER-DIAMOND Floor Plate • Billets Plates • Sheets • Strip • (Alloy and Special Grades.)

Stud Welding division of Morton Gregory Corporation, has been appointed manager of industrial sales, with offices at the division's headquarters in Lorain, Ohio. In his newly-created post, Mr. McArthur will coordinate stud welding sales and engineering service to national firms having engineering and purchasing departments in various locations.

A. V. Adamson, manager of the New York district sales office of Combustion Engineering-Superheater, Inc., for the past 25 years, has retired. He will continue to serve the company in a consulting capacity.

William E. Gray, vice-president in charge of engineering for the Peerless Equipment Company, Chicago, has been elected first vice-president.

CONSTRUCTION

Chicago & Eastern Illinois.—This road has awarded to the P. & H. Construction Co., Evansville, Ind., a contract amounting to \$37,602, for construction of a yard office at Wansford, near Evansville. This job, which is in connection with a \$750,000 freight yard improvement program (see *Railway Age* of October 8, 1949, page 84), includes construction of the building, heating installation, lavatory facilities and all appurtenances required for a modern yard office.

FINANCIAL

Arkansas & Ozarks.—Financing Plan. —This company, which proposes to acquire and operate about 71 mi. of the 335-mi. system abandoned by the former Missouri & Arkansas, has filed with the I.C.C. an application for approval of its plan for financing the acquisition. The commission has not yet acted on the company's application for approval of the acquisition, which was filed last March (see *Railway Age* of April 2, 1949, page 58).

The financial plan for which approval is sought in the present application contemplates issuance of promissory notes in the amount of \$40,000, and 1,500 shares of preferred stock and 500 shares of common, both of the par value of \$100 per share. The stock would be distributed, in exchange for the properties to be acquired, to the six persons who were M.&A. stockholders when that corporation was dissolved last July—Murray M. Salzberg, Meyer P. Gross, Morris H. Snerson, Saul Frankel, Maurice I. Schwartz, and Herman Schwartz. The promissory-note issue would consist of 80 4 per cent notes, and these would be

delivered to the same six persons in repayment for advances. The notes would mature over the period from May 1, 1950, to February 1, 1952.

By separate application, Messrs. Salzberg, Gross, and Snerson, who together held 50 per cent of the M. & A. stock, are seeking I.C.C. permission to acquire control of the A.&O. Under the above noted stock distribution they would hold 50 per cent of the stock of the new company, and their application stated that they are seeking permission to acquire control of the A.&O. in order to manage the line in conjunction with other short line roads which they own.

Delaware & Hudson.—New Directors.—Russell E. Dill, a financial specialist and consultant, and Lindsay Bradford, president of the City Bank Farmers Trust Company, New York, have been elected directors of this railroad and managers of the parent Delaware & Hudson Co.

Gulf, Mobile & Ohio.—Collateral Security Bonds.—The I.C.C. has amended its order of July 2, 1948, in which this road was authorized to issue \$6,405,000 of first-and-refunding mortgage 4-per cent bonds, series F, due 1964, to be pledged as partial security for certain collateral trust bonds. The G.M.&O. has issued only \$4,215,000 of the series F bonds, and the commission's amended order limits to this amount the number of such bonds that may be issued and pledged. The amendment was requested in a petition filed by the road. (See *Railway Age* of July 17, 1948, page 58.)

Lehigh Valley.—Merger of Subsidiaries.—Division 4 of the I.C.C. has approved a plan for the merger into this road of 11 of its subsidiaries, and for the assumption of obligation by the L.V. of \$50,354,000 of subsidiaries' bonds. The Lehigh, which has been operating the roads under lease arrangements, already owns all stock of each subsidiary except one, the Lehigh & New York, of which it owns approximately 99 per cent. (See *Railway Age* of September 17, 1949, page 98.) All subsidiary stock owned by the Lehigh will be surrendered for cancellation under the merger plan, and for the New York Company stock not owned by the L.V. the latter will pay \$3.75 for each share of common, \$10 for each share of preferred, and \$10 for each share of preferred stock scrip. The merger transaction, when consummated, is expected to simplify the corporate structure of the L.V., result in tax savings, and eliminate administrative costs and intercompany financial transactions.

New York, Susquehanna & Western-New York Central.—Trackage Rights.—Final settlement of litigation between these roads has been announced by Henry K. Norton, trustee of the Susquehanna. The settlement was made pursuant to a report of the I.C.C. that the Central's trackage rights over the Susquehanna lines at Edgewater, N. J., should be continued only if the Cen-

The Ranger

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... a Rugged Heavy Duty Unit—

designed to take all
sorts of rough treatment,
and still give high-quality
dependable performance

- designed for clear, crisp natural-voice response of high speech intelligibility.
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- equipped with a cartridge similar to that originally used by the Armed Forces in World War II.

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MODEL	CABLE	OUTPUT LEVEL	IMPEDANCE	SHPG. WT.	CODE	LIST PRICE
505B	7 ft.	47.0 db below 1 milliwatt per 10 micro- bar signal	150-250 ohms	1 1/4 lb.	RUDAY	\$25.00
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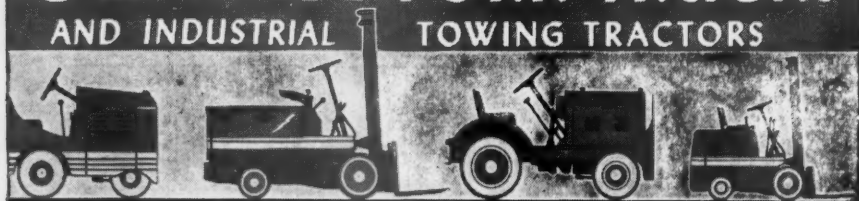
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Malcom A. Buckey, Vice President
MERCHANTS WAREHOUSE COMPANY
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AUTHORIZED CLARK INDUSTRIAL TRUCK PARTS AND SERVICE STATIONS IN STRATEGIC LOCATIONS

tral entered into a new agreement providing for increased compensation to the Susquehanna for the handling of the Central's cars. The rates provided in the new agreement (which is subject to court approval), are to be adjusted annually. Effective January 1, 1950, they are \$14.58 per car on the Southern Extension and \$14.72 on the Northern Extension, in lieu of the old rates of \$7.65 and \$5.30. As part of the settlement the N.Y.C. paid \$275,000 to the Susquehanna as additional compensation for the handling of cars up to January 1, 1950.

Pennsylvania.—*Bonds of Elmira & Williamsport.*—Division 4 of the I.C.C. has granted authority for the E.&W. to extend to January 1, 1990, the maturity date of \$963,000 of first mortgage 4 per cent bonds due January 1, 1950, and also has authorized the P.R.R., as lessee of the E.&W., to assume liability for these bonds. (See *Railway Age* of December 10, page 74.) The P.R.R., which owned \$47,000 of the bonds prior to this application, was to acquire from the public the additional \$916,000 on or before the January 1, 1950, maturity date and thereafter will hold the bonds in its treasury.

Reading.—*Merger of Leased Line.*—The I.C.C. has approved a merger into this road of its lessor, the Schuylkill Valley Navigation & Railroad Co. The merger is designed to simplify the corporate structure of the Reading, and will result in certain net annual savings. (See *Railway Age* of September 3, 1949, page 80.) The Schuylkill owns approximately 15.9 mi. of line from near Tamaqua, Pa., to Palo Alto. Two-thirds of its capital stock, already owned by the Reading, will be surrendered for cancellation, and the Reading will acquire for cancellation all other Schuylkill stock, now held by the public, on an exchange basis of 1¼ shares of its own first preferred for each share of Schuylkill.

New Securities

Application has been filed with the Interstate Commerce Commission by:

Illinois Central.—To issue \$8,407,000 of consolidated mortgage bonds, Series C, in addition to \$52,201,000 consolidated mortgage bonds, Series A, B, and C, previously authorized under its refinancing plans. (See *Railway Age* of November 5, page 68.) The new issue, to be dated November 1, 1949, and run for 25 years at 3¾ per cent, would be used to retire a like amount of collateral trust 4 per cent bonds due November 1, 1953. The bonds would be exchanged in like principal amounts, with the road making a cash payment of \$25 per \$1,000 bond exchanged under the plan. The collateral trust bonds received by the road under this exchange plan would be pledged under the consolidated mortgage as security for the new issue. The I.C. noted in its application that "conditions are reasonably favorable at this time for the offer of exchange to be made."

Pennsylvania.—To assume liability for \$10,620,000 of equipment trust certifi-



RESTORE ANY LINER TO STANDARD SIZE

NOW IT PAYS to Re-STANDARD-Size *ALL* liners, even those bored out 1/16 of an inch or more. The answer is VANDERLOY M, a process for applying *all* the advantages of PORUS-KROME without former dimensional limits.

YET THE SAME PORUS-KROME bearing surface is developed, no matter what total thickness is required. Liners ready for discard can be brought back to original dimensions and given as much as four times longer wearing life than they had when first installed.

TRIED, PROVED AND ACCEPTED, PORUS-KROME liners not only wear longer but use less oil and are as much as three times easier on

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NOW, WITH THE ECONOMY of the VANDERLOY M process available, it pays to have PORUS-KROME in every Diesel liner. And it will pay to ask for full information at once.

**PORUS-KROME is a dense, hard, wear and corrosion-resistant chromium, produced by the Van der Horst Corporation of America, and which gives working surfaces an infinite number of tiny oil-retaining reservoirs for perfected lubrication.*

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Nothing equals Rust-Oleum—the proved rust preventive—for the lasting protection of metal—especially in closed or inaccessible areas where condensation due to temperature changes breeds rust.

Rolling Stock,
Bridges, Tanks, Towers
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Against COSTLY RUST!

RUST-OLEUM

Stops Rust!

- Rust-Oleum cuts preparation time. No sandblasting or chemical cleaners are necessary.
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- Apply by brush, dip or spray . . . in less time. Also available in small container sizes for economical distribution and field use.



Day and night—twenty-four hours a day—rust attacks railroad properties. Stop its deadly ravages by providing Rust-Oleum protection. Rust-Oleum coats metal with a tough, pliable moistureproof film that lasts years longer. *It's the proved answer to many rust problems.*

Rust-Oleum can be applied effectively and economically on all metal surfaces now in service—even where rust has already started. Merely wire-brush to remove scale and loose rust. Rust-Oleum merges the remaining rust into a rust-resisting, durable coating that defies time and the elements.

Save time and labor. Avoid frequent and costly replacements. Protect your properties with Rust-Oleum. Specify Rust-Oleum on new equipment, for re-building jobs . . . and for maintenance.

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cates, series Y, the first installment of a proposed \$20,820,000 issue, the whole of which would finance in part the following Diesel-electric units:

Description and builder	Estimated Unit Cost
10 2,250-hp. passenger "A" (Electro-Motive Division, General Motors Corporation)	\$241,000
39 1,500-hp. freight "A", as follows:	
20 (Electro-Motive)	181,000
7 (Electro-Motive)	176,000
8 (Baldwin Locomotive Works)	174,500
4 (American Locomotive Company)	180,000
27 1,500-hp. freight "B", as follows:	
15 (Electro-Motive)	155,000
8 (Baldwin)	153,000
4 (American)	156,000
65 1,000-hp. switching locomotives, as follows:	
21 (Baldwin)	99,000
8 (Baldwin)	103,500
6 (Baldwin)	100,000
14 (American)	99,000
6 (American)	104,000
2 (American)	106,000
6 (American)	102,000
2 (American)	107,000
24 750-hp. switching locomotives (Baldwin)	89,000
1 1000-hp. road switcher (Baldwin)	115,700
16 1,200-hp. switching locomotives (Electro-Motive)	100,000
11 2,500-hp. switching locomotives as follows:	
3 (Lima-Hamilton Corporation)	184,000
3 (Lima-Hamilton)	188,000
5 (Lima-Hamilton)	192,000

The application put the estimated total cost of this equipment at \$26,025,000. The whole issue of certificates planned would be dated January 1, 1950, and mature in 15 annual installments of \$1,388,000 each, beginning January 1, 1951. The installment now proposed would be sold by competitive bids, with interest to be set by such bids.

Division 4 of the I.C.C. has authorized:

Western Maryland.—To issue, \$46,177,000 of general mortgage bonds, including \$44,177,000 to be offered in exchange for a like principal amount of non-callable, first mortgage bonds due October 1, 1952; and \$2,000,000 to be sold without competitive bidding at 100.65 plus accrued interest to finance in part redemption of \$5,234,000 of collateral trust bonds and \$1,275,000 of first mortgage bonds of the W. M. subsidiary, the Greenbrier, Cheat & Elk. (See *Railway Age* of December 3, page 69.) The new bonds will be dated October 1, 1949, and bear interest at 4½ per cent to October 1, 1952, and at 4 per cent thereafter. They will mature October 1, 1969. As security for the new issue, the W. M. is to pledge the exchanged bonds and other first mortgage bonds held in the company treasury, as well as all capital stock (15,000 shares of \$100 par each) of its wholly-owned subsidiary, the Cumberland & Pennsylvania. The G. C. & E. first mortgage bonds involved in the redemption noted above are \$1,125,000 of 4 per cent bonds and \$150,000 of 3½ per cent bonds.

Average Prices Stocks & Bonds

	Jan.	Prev.	Last
		3	week year
Average price of 20 representative railway stocks..	40.88	39.57	42.09
Average price of 20 representative railway bonds..	90.70	89.01	88.28

Dividends Declared

East Pennsylvania — \$1.50, semiannual, payable January 17 to holders of record December 31, 1949.

Piedmont & Northern — 75 cents, quarterly,

Railway Age—January 7, 1950

payable January 20 to holders of record January 5.
Reading — 50 cents, quarterly, payable February 9 to holders of record January 12.
Richmond, Fredericksburg & Potomac — Common voting, 75 cents, initial; common non-voting, 75 cents, initial; dividend obligations, 75 cents; all payable December 28, 1949, to holders of record December 21, 1949.
Tunnel R. R. Co. of St. Louis — \$3.00, semi-annual, payable January 1 to holders of record December 15, 1949.

ABANDONMENTS

St. Louis-San Francisco. — Examiner Robert Romero has recommended in a proposed report that Division 4 of the I.C.C. permit this road to abandon approximately 8.2 mi. of line extending from Mt. Vernon, Mo., to Miller. The line, which has been operated at a loss for the past four years, is paralleled by a hard-surfaced highway. An earlier abandonment application, filed in 1947, was dismissed at the road's request when shippers on the line said they would endeavor to increase the volume of traffic. The road renewed its application in April, 1949, and Examiner Romero, noting the increases in traffic have not materialized, recommends favorable action by the I.C.C.

Missouri-Kansas-Texas. — Examiner Lucian Jordan of the I.C.C. has recommended in a proposed report that this road be granted authority to abandon a branch line of approximately 9.4 mi. in Latimer County, Okla. "The line in question has been operated at a substantial loss for several years," the examiner found. Wilburton, Okla., principal town served by the line, will continue to have rail service as it is located on the main line of the Chicago, Rock Island & Pacific.

Ohio & Morenci.—Division 4 of the I.C.C. has reopened for further hearing the case in which this road seeks permission to abandon its entire line extending from a point near Berkey, Ohio, to Morenci, Mich., 21 mi., and 1.7 mi. of industrial track in Blissfield, Mich. In previous action in the case, the division denied the road's application (see *Railway Age* of October 15, page 70).

RAILWAY OFFICERS

EXECUTIVE

Rufus H. Flinn, assistant to the general manager of the Central region of the Pennsylvania at Pittsburgh, Pa., has been promoted to assistant to the vice-president of that region, succeeding **W. K. Chapman**, who has been appointed assistant general freight agent, special duty, Philadelphia, Pa. **R. H. Streicher**, special agent, has been promoted to special representative at Pittsburgh, succeeding **J. E. Phillips**, who retired on

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handling for**

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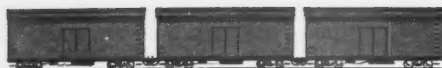
Two men and a battery-powered truck unload an 80,000 lb. car of sacked semolina in four hours. A saving of \$46.00 per car totals almost \$1,500 per month *in car-unloading alone*.

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times . . . handling foodstuffs, it must be fume-free. Mr. Samuel T. Viviano, Secretary and Treasurer of the Company, says, "A battery truck is the only powered machine that will give us this type of service. We have come to rely on the work done by this truck to such an extent that we couldn't operate without it."

Another example of electric truck *dependability* and *cleanliness* helping industry—while providing material handling at *lowest cost per unit moved*. This criterion, rather than initial investment, explains why so many industries prefer battery-powered trucks!

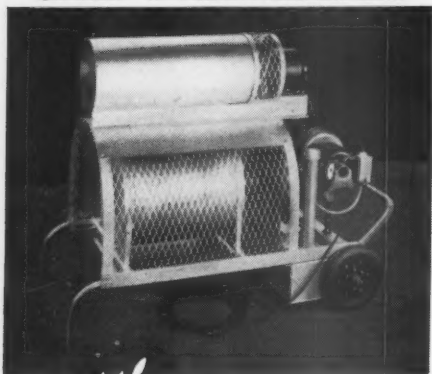
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December 31, 1949, after 47 years of service.

Mr. Flinn is a native of Camden, N. J., and was graduated from Cornell University in 1909. He began his railroad service in 1901 as a clerk at Amboy, N. J., while still in school. Following his graduation from college, Mr. Flinn became a special apprentice at Indianapolis, Ind., and, after several promotions, was appointed master mechanic on the Terre Haute division in 1920, superintendent of motive power at Buffalo, N. Y., in 1927, and general superintendent of motive power for the Central region at Pittsburgh in 1929. A year later Mr. Flinn was advanced to general superintendent of the Western Pennsylvania division, a position he held until 1939, when ill health forced him to take a leave of absence. He returned to service June 1, 1940, as assistant to the general manager.

E. L. Faulconer, former president and general manager of the Atlantic & Yadkin (which became an integral part of the Southern System on January 1), has been appointed executive general agent of the Southern System, with headquarters at Greensboro, N. C.

Dean H. Eastman, Western counsel for the Northern Pacific, with headquarters at Seattle, Wash., has been appointed also assistant vice-president, with headquarters as before at Seattle.

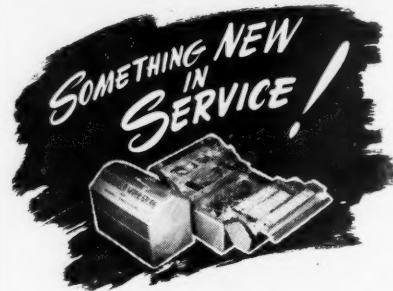
FINANCIAL, LEGAL & ACCOUNTING

Margaret Watts, assistant secretary of the Illinois Terminal, at St. Louis, Mo., has retired at her own request, and has been succeeded by Vera Mavis.

William J. Holden, whose retirement as chief claim agent of the New York Central at Chicago was reported in the *Railway Age* of December 31, was born September 1, 1881, at White Plains, N. Y. Mr. Holden entered railroad service in March, 1901, as stenographer in the operating department of the N.Y.C.'s River division at Weehawken, N. J. He was transferred to the claim department in 1904, and served successively as claim agent, district claim agent and assistant chief claim agent until his appointment as chief claim agent at Detroit, Mich., in November 1943. Mr. Holden was appointed chief claim agent at Chicago in November, 1946.

W. Pryor Haynes, assistant to the auditor of disbursements of the Central of Georgia, has been appointed auditor of disbursements, with headquarters as before at Savannah, Ga., succeeding Mongin B. Nichols, who has retired after more than 57 years of service. W. J. Cleary, chief clerk in the office of the auditor of disbursements, has been advanced to succeed Mr. Haynes.

Mr. Haynes entered the service of the C. of G. on October 3, 1911, as a mail clerk in the office of the auditor of



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traffic and subsequently held various clerical positions. In September, 1917, he was named valuation accountant and was promoted to head clerk, statistical, road and equipment accounts bureau in May, 1918, becoming accountant in May, 1920; traveling auditor on September 16, 1926; chief clerk on July 1, 1937, and assistant to auditor of disbursements on November 16, 1943.

Mr. Nichols, who was born at Savannah, joined the C. of G. on April 4, 1892, as stenographer and clerk in the office of the comptroller at Savannah. He was promoted to station accountant on November 7, 1899; auditor of traffic on June 1, 1907; auditor on July 1, 1917, and auditor of disbursements on March 1, 1920. Mr. Nichols has served as chairman of various committees of the Accounting Division of the Association of American Railroads, and was secretary of the Southeastern Accounting Conference from 1908 to 1918 and from 1927 to October 7, 1949.

Walter H. Johnson, assistant treasurer of the Railway Express Agency, has been appointed treasurer, with headquarters as before at New York, succeeding W. B. Clark, vice-president and treasurer, who has retired.

H. L. Hazelwood, auditor of expenditures of the Chesapeake district of the Chesapeake & Ohio, has been appointed auditor, succeeding J. F. Andrews, who has been appointed special auditor. C. E. Weaver, Jr., assistant auditor station accounts and overcharge claims, has been appointed auditor station accounts and overcharge claims, succeeding R. R. Stant, who has been appointed to succeed Mr. Hazelwood as auditor of expenditures. W. E. Kelley, supervisor of records, has been appointed general accountant, succeeding H. M. Crenshaw, who has been appointed assistant auditor station accounts and overcharge claims, to succeed Mr. Weaver. All the above will have headquarters at Richmond, Va.

OPERATING

W. M. Morrison, road foreman of equipment for the St. Louis-San Francisco, at Sherman, Tex., has been appointed assistant superintendent, with headquarters at Newburg, Mo. Appointed assistant superintendent at Thayer, Mo., is J. C. Cowles.

W. E. Satterwhite, foreman of the Hermitage yards of the Seaboard Air Line at Richmond, Va., has been appointed safety supervisor at Norfolk, Va.

L. B. Coleman, assistant superintendent of the Salt Lake division, Denver & Rio Grande Western, with headquarters at Salt Lake City, Utah, has been promoted to superintendent of the Alamosa division, succeeding E. B. Herdman, whose promotion to manager of personnel was reported in the *Railway Age* of November 15, 1949. Advanced to succeed Mr. Coleman is L. P. Urqu-

hart, trainmaster on the Salt Lake division at Helper, Utah, who has been succeeded in turn by W. B. Jacobsen. C. D. Miller, terminal trainmaster at Roper Yards, Utah, has been promoted to assistant superintendent at the Rio Grande's North Yard, with supervision over the Denver terminal.

M. J. McDonough, assistant superintendent of the Pennsylvania division of the Delaware & Hudson, has been appointed superintendent of that division, with headquarters at Carbondale, Pa., succeeding C. A. Morgan, who has retired at his own request. Mr. Morgan was born at North Brookfield, N. Y.,

on March 18, 1873, and entered railroad service with the Delaware, Lackawanna & Western in 1887 as telegrapher, leaving that road in 1891 to take a similar position on the Erie. One year later he joined the New York Central as telegrapher and in 1894 went with the D.&H. in the same capacity. Mr. Morgan was appointed train dispatcher in 1901; assistant chief dispatcher in 1903; chief dispatcher in 1904; assistant trainmaster in 1907; trainmaster in 1909, and division superintendent in 1913.

L. M. Riley, trainmaster of the Cleveland, Cincinnati, Chicago & St. Louis



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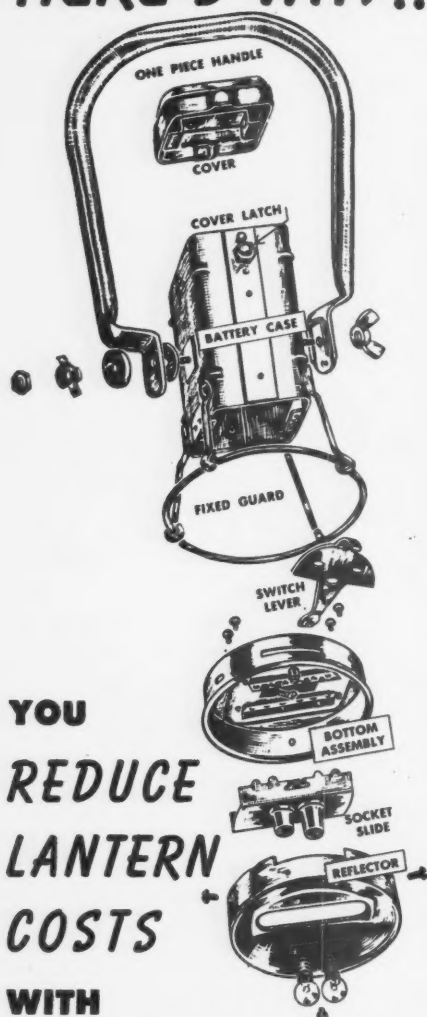
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(New York Central) at Indianapolis, Ind., has been appointed assistant to assistant general manager, Lines West, N. Y. C. System, with headquarters at Cleveland, Ohio.

Stuart Schumate has been appointed superintendent of Potomac Yards, Alexandria, Va. It is a newly-created position, and the appointment became effective January 5.

L. W. Shuman, whose appointment as superintendent terminals of the Atlantic Coast Line at Jacksonville, Fla., was reported in the *Railway Age* of December 31, 1949, was born at Furman, S. C. He entered the service of the A.C.L. at Savannah, Ga., on November 1, 1923, and has since served successively as extra dispatcher at Savannah, car distributor and extra dispatcher at Montgomery, Ala.; ticket agent-telegrapher at Jesup, Ga.; dispatcher and chief dispatcher at Waycross, Ga., and trainmaster at Sanford, Fla., and Savannah.

Oscar S. Toler, whose appointment as superintendent terminals of the Atlantic Coast Line at Montgomery, Ala., was reported in the *Railway Age* of December 31, 1949, entered the service of the A.C.L. on April 27, 1925, as secretary in the property protection department at Rocky Mount, N. C. Since that time he has served successively as claim clerk at Rocky Mount; secretary to superintendent at Dunnellon, Fla.; accountant there; and general clerk, assistant chief clerk, and general yardmaster, all at Sanford, Fla. After serving in the armed forces, Mr. Toler returned to the A.C.L. on October 1, 1945, in the last-mentioned position, and then served successively as transportation inspector at Atlanta, Ga., trainmaster at Manchester, Ga., and terminal trainmaster at Birmingham.

TRAFFIC

R. M. Conlin, Jr., division passenger agent of the Baltimore & Ohio at Toledo, Ohio, has been transferred to Pittsburgh, Pa., succeeding **E. D. Phillips**, who has been transferred to Detroit, Mich. **R. C. Mitchell, Jr.**, has been appointed division passenger agent at Toledo, succeeding Mr. Conlin.

Lewis M. Whitehead, manager of mail, baggage and express traffic of the Chicago, Burlington & Quincy at Chicago, retired on December 31 after 51 years' service. He is succeeded by **Donald C. Raffensparger**, assistant manager of mail, baggage and express traffic at Chicago.

Sidney A. Smith, assistant to freight traffic manager of the Central of Georgia at Savannah, Ga., has retired from active service, after almost 56 years of service. **Hubert M. Croghan**, commerce agent, has been advanced to assistant general freight agent at Savannah. **William W. Hackett**, assistant general passenger agent at Macon, Ga., retired on January 1, and has been succeeded



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by **Gelston P. Lockhart**, whose title has been advanced from traveling passenger agent to division passenger agent.

A. L. Thompson, former vice-president and traffic manager of the Atlantic & Yadkin (which became an integral part of the Southern System on January 1), has been appointed assistant general freight agent of the Southern System at Greensboro, N. C.

George A. Hoffelder, assistant general freight traffic manager of the Chicago, Burlington & Quincy at Chicago, has been promoted to freight traffic manager in charge of rates and divisions at that point. **Paul G. Bohlson**, assistant general freight agent at Chicago, has been appointed to the newly-created position of assistant freight traffic manager in charge of the commerce department at that point, and is succeeded by **Clarence E. Larsen**, chief of the tariff bureau there. **Lloyd J. Gilmore**, office manager in the general freight office at Chicago, succeeds Mr. Larsen.

W. H. Morrow has been appointed general agent of the Duluth, South Shore & Atlantic at Pittsburgh, Pa.

H. A. Trulove, assistant to general passenger agent of the Atlantic Coast Line at Wilmington, N. C., has been appointed assistant general passenger agent, with the same headquarters.

Everett G. Baker, general passenger traffic manager of the St. Louis-San Francisco, with headquarters at St. Louis, Mo., has been promoted to general traffic manager at that point. In his new post Mr. Baker will be in charge of sales and service for both freight and passenger traffic. **M. Dudley Riggs**, general passenger agent at St. Louis, has succeeded Mr. Baker. **Perry W. Wilson** and **Alex W. Arnett**, assistant general passenger agents at St. Louis, have been promoted to general passenger agents.

Edward N. Mayer, general freight agent of the Boston & Maine at Boston, Mass., has been appointed general traffic manager of the Plymouth Cordage Company, Plymouth, Mass., effective January 3, succeeding **William P. Libby**, who will retire from active service on March 1. Mr. Mayer entered railroad service in 1916 as clerk on the Erie and joined the B. & M. in 1927, serving successively as chief clerk, traffic representative and commercial agent at Chicago until June, 1944, when he became general agent at Detroit. He was appointed general freight agent at Boston on January 5, 1946.

H. Chan White, general freight agent, sales, of the Central of Georgia, has been promoted to assistant freight traffic manager, sales, with headquarters as before at Savannah, Ga. Mr. White was born at Thomaston, Ga., and entered the service of the C. of G. there on February 1, 1914, as agent. In 1922 he was transferred to the traffic department as chief clerk in the office of the

Railway INSULMAT

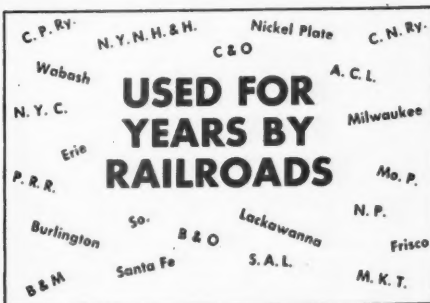
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assistant general freight agent at Macon, Ga. On July 1, 1923, he was appointed Florida freight agent at Jacksonville, Fla., and on November 1, 1928, became Florida freight and passenger agent there. On March 1, 1939, he was appointed division freight agent at Macon and in 1945 became general freight agent at Savannah.

ENGINEERING & SIGNALING

George H. Echols, division engineer of the Southern System at Atlanta, Ga., has been promoted to chief engineer, maintenance of way and structures, at Knoxville, Tenn., succeeding the late **Robert F. Logan**.

J. M. Fair, assistant chief engineer maintenance of way of the Central region of the Pennsylvania, with headquarters at Pittsburgh, Pa., retired on December 31 after 39 years of service.

J. M. Salmon, Jr., assistant bridge inspector of the Louisville & Nashville, with headquarters at Louisville, Ky., has been appointed chief engineer of the Clinchfield, with headquarters at Erwin, Tenn., succeeding **V. B. Elliott**, who has retired after 44 years of service.

H. Gray Carter, engineer maintenance of way of the Central of Georgia, has been appointed chief engineer at Savannah, Ga., succeeding **Hiram F. Sharpley**, who retired on January 1, after more than a half century of railroad service. **George A. Belden**, engineer bridges and buildings, has been named assistant engineer. Mr. Carter was born at Marlin, Tex., and was graduated from Alabama Polytechnic Institute, Auburn, Ala., in civil engineering. He



H. Gray Carter

entered the service of the C. of G. as draftsman in the roadway department on September 4, 1916, having had three years' experience in survey and topographical work. He served short intervals as assistant engineer of the Savannah, Columbus and old Southwestern divisions, and was promoted to division engineer of the Southwestern division on January 16, 1925, transferring

to the Columbus division on October 1, 1931. Mr. Carter was promoted to engineer maintenance of way on March 1, 1942.

Mr. Sharpley is a native of Philadelphia, Pa., where he took a civil engineering course at the University of Pennsylvania. He entered the service of the C. of G. as draftsman on November 14, 1899, after three years with the



Hiram F. Sharpley

Pennsylvania and Erie. Mr. Sharpley was promoted to assistant engineer on January 1, 1902; real estate engineer on July 1, 1906; office engineer on July 1, 1909; principal assistant on December 1, 1911; assistant chief engineer on June 1, 1926, and chief engineer on June 22, 1936. He has served as Georgia Chairman, Chief Engineers Committee, Association of American Railroads.

William B. Throckmorton, system locating engineer of the Chicago, Rock Island & Pacific, has been promoted to chief engineer, with headquarters at Chicago, succeeding **Frank W. Thompson**, retired. Appointed assistant chief engineer at Chicago is **Walter E. Heimerdinger**, engineer of bridges at that point, who has been succeeded by **J. F. Marsh**, assistant bridge engineer. **F. W. Madison**, division engineer, with headquarters at Kansas City, Mo., replaces Mr. Marsh. **James T. Fitzgerald**, construction engineer, becomes engineer maintenance of way, at Chicago, succeeding **B. Bristow**, appointed principal assistant engineer at that point. Mr. Bristow succeeds **L. J. Hughes**, who has retired after 43 years of service.

All commercial telegraph service formerly handled by the Northern Telegraph Company (a subsidiary of the Bangor & Aroostook) has been taken over by the Western Union Telegraph Company. **Tom Cudhea**, formerly connected with the signal department of Northern Telegraph, has been appointed superintendent of signals and communications of the Bangor & Aroostook, with headquarters at Derby, Me.

W. G. Powrie, whose promotion to assistant chief engineer—system, of the

Chicago, Milwaukee, St. Paul & Pacific at Chicago, was reported in the *Railway Age* of December 24, was born on August 5, 1904, at Milwaukee, Wis. Mr. Powrie began his railroad career in 1920 with the Milwaukee, and, from 1923 to 1928, held the positions successively of chainman, rodman and instrumentman, and served in the office of the district engineer at Minneapolis, Minn. He was subsequently appointed assistant engineer at Mason City, Iowa, and in 1930 became assistant to general



W. G. Powrie

supervisor bridges and buildings at Chicago. The following year he was advanced to division engineer, Iowa and Southern Minnesota division, at Austin, Minn. Mr. Powrie later served in the same position at Savanna, Ill., becoming assistant engineer (water service) at Chicago in 1932. In 1935 he was named engineer of water service, and in 1937 was also appointed assistant superintendent of track maintenance at Chicago. Since May, 1941, he has served as engineer maintenance of way at Chicago, the position he held prior to his latest promotion.

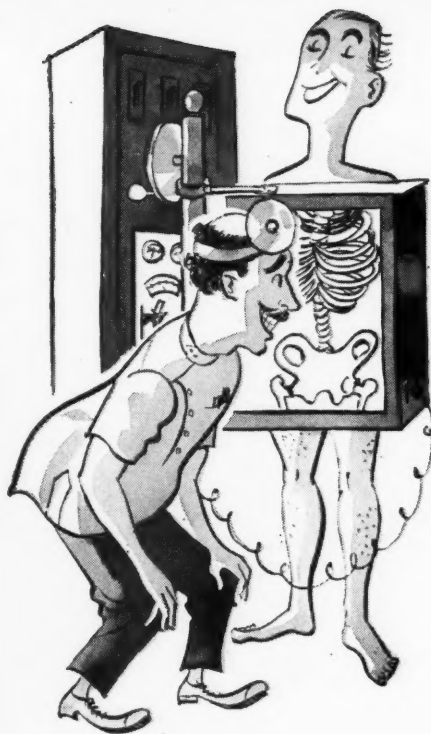
SPECIAL

W. A. Johnson, division special agent of the Central of Georgia at Birmingham, Ala., has been appointed chief special agent, with headquarters at Macon, Ga., succeeding William J. Poole, who retired on January 1.

OBITUARY

Charles Shostrom, general superintendent freight claim department, Chicago, Rock Island & Pacific, at Chicago, died at St. Luke's hospital in that city on December 28.

A. E. Callin, general auditor of the Union Pacific at Omaha, Neb., died on December 29 of a cerebral hemorrhage, at the age of 68. A photograph and biographical sketch of Mr. Callin appeared in the *Railway Age* of August 6, 1949, in connection with his promotion to general auditor.



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